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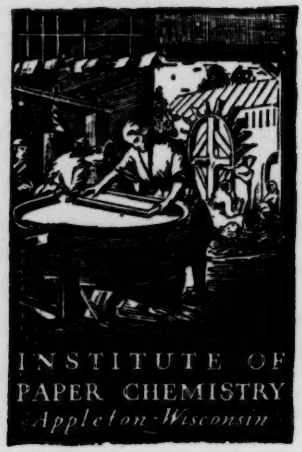
BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

APRIL · 1950

Volume 20 Number 8

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Books and Pamphlets Added to the Library During March

BIOGRAPHY

WHO'S WHO in America; a biographical dictionary of notable living men and women. Rev. and reissued biennially. Vol. 26, 1950-1951. Chicago, The A. N. Marquis Company, 1950. 3347 p.

BUILDING MATERIALS

[U. S. NATIONAL BUREAU OF STANDARDS. *Commodity Standards Division*] Structural fiber insulating board. 4th ed. Commercial standard CS42-49. Washington, U. S. Govt. Print. Off. [1950] 17 p.

[U. S. NATIONAL BUREAU OF STANDARDS. *Commodity Standards Division*] Wood-fiber blanket insulation (for building construction). Commercial standard CS160-49. Washington, U. S. Govt. Print. Off. [1950] 12 p.

COLLECTIVE BARGAINING

MYERS, CHARLES A., and SHULTZ, GEORGE P. Nashua Gummed and Coated Paper Company and seven AFL unions; a case study. [Case study no. 7 prepared for the NPA Committee on the Causes of Industrial Peace under Collective Bargaining] Washington, National Planning Association [1950] 89 p.

DISSERTATIONS, ACADEMIC

DOCTORAL DISSERTATIONS accepted by American universities 1948-1949 (number 16). Compiled for the Association of Research Libraries, ed. by Arnold H. Trotier and Marian Harman. New York, Wilson, 1949. 176 p.

ELECTRONICS

NATIONAL ELECTRONICS CONFERENCE. Proceedings of the conference . . . Chicago, Illinois, November 4, 5, 6, 1948. Chicago, National Electronics Conference, Inc. [c1949] v. 4. 506 p.

INSECTS, INJURIOUS AND BENEFICIAL

COTTON, R. T., FRANKENFELD, J. C., and DEAN, G. A. Controlling insects in flour mills. U. S. Dept. of Agriculture. Circular no. 720. Washington, U. S. Govt. Print. Off., 1945. 75 p.

PAPER MAKING AND TRADE

VERBAND SCHWEIZERISCHER PAPIER- und PAPIERSTOFF-FABRIKANTEN, *Bern*. Die schweizerische Papierindustrie in Vergangen-

heit und Gegenwart. Festschrift zum 50jährigen Jubiläum des Verbandes Schweizerischer Papier- und Papierstoff-Fabrikanten, 1949. [Text von Werner Lanz, Illustrationen von Hugo Laubi. Bern, Der Verband] 1949. 145 p.

PAPER MAKING AND TRADE—HISTORY

HOVING, VICTOR. Kymmene Aktiebolag, 1872-1947. II. Kuusankoski, Kymin Osakeyhtiö—Kymmene Aktiebolag [1948] v. 2. 342 p.

PAPER WORK

DAY, FREDERICK T. Colour paper decoration. Home handicraft series. London, C. Arthur Pearson, Ltd. [1948] 128 p.

PENICILLIUM

RAPER, KENNETH B., THOM, CHARLES, and FENNEL, DOROTHY I. A manual of the penicillia. Baltimore, The Williams & Wilkins Co., 1949. 875 p.

PHYSICS

PHYSICAL SOCIETY OF LONDON. Reports on progress in physics. London, The Society, 1949. v. 12 (1948-1949). 382 p.

PRINTING

NINTH GRAPHIC ARTS production yearbook; the standard reference volume on production in advertising and publishing. New York, Colton Press Inc., c1950. 728 p.

RESEARCH

CONFERENCE ON ADMINISTRATION OF RESEARCH. Proceedings of the Conference . . . Oct. 6-7, 1947. [The Pennsylvania State College School of Engineering. Technical bulletin no. 29] State College, Pa., The School of Engineering, 1947. 124 p.

RHEOLOGY

SCOTT BLAIR, G. W. A survey of general and applied rheology. 2d ed. London, Pitman, 1949. 314 p.

STATISTICS

U. S. BUREAU OF THE CENSUS. Statistical abstract of the United States, 1949. 70th ed. Prepared under the supervision of Morris B. Ullman. Washington, U. S. Govt. Print. Off. [1949] 1122 p.

SULFITE WASTE LIQUOR

BJÖRKMAN, ANDERS. Studies on hydrogenation of sulphite waste liquor. Kungl. Tekniska Högskolans Handlingar nr. 31. Göteborg, Elanders Boktryckeri Aktiebolag, 1950. 41 p.

SUMAC

Clarke, Ira D., Rogers, J. S., Sievers, A. F., and Hopp, Henry. Tannin content and other characteristics of native sumac in relation to its value as a commercial source of tannin. U. S. Dept. of Agriculture. Technical bulletin no. 986. Washington, U. S. Govt. Print. Off., 1949. 76 p.

TRADE DIRECTORIES

Phillips' paper trade directory of the world, 1950, with which is incorporated "Phillips' directory of paper makers of Great Britain and Ireland" and "Phillips' paper trade directory of the British Empire." London, S. C. Phillips & Co., c1950. 708 p.

WATER

Vom Wasser. Ein Jahrbuch für Wasserchemie und Wasserreinigungstechnik. Herausgegeben von der Fachgruppe Wasserchemie in der Gesellschaft Deutscher Chemiker. Verantwortlich für den Textteil; Wilhelm Husmann. 17. Band 1949. Berlin, Verlag Chemie, 1949. 226 p.

WOOD—TESTING

Wangaard, Frederick F. The mechanical properties of wood. New York, Wiley [c1950] 377 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ADHESIVES

ARABOL MANUFACTURING COMPANY. Envelope dextrine UDO-54 high in advantages. Am. Paper Converter 24, no. 3: 15, 35 (March, 1950).

A dry envelope gum recently introduced by the company is composed of a 100% tapioca dextrin base and contains a new conversion agent, which gives the gum a light color, low viscosity, and long stability. Some of the advantages claimed for this gum, designated as UDO-54, are: ability to work on a wide range of papers and a variety of machines, high gloss, stable adhesive properties, high remoistening tack, a yield of three extra gallons of adhesive per 100 pounds of dry gum, and no pasting back or thickening in the gum box. 1 illustration. J.A.B.

ADVERTISING

ANON. Bags can be advertising media. Am. Paper Merchant 47, no. 3: 23, 41 (March, 1950).

A new national advertising medium, whereby the plain surfaces of ordinary kraft grocery bags can be utilized for nationwide advertising at no extra cost to the bag retailer, has been evolved by National Bag Advertising, Inc. "Ad-Bags" are made by regular bag manufacturers and distributed through customary channels; National Bag merely sells space on these bags. Chain stores and paper merchants order plain bags from their own suppliers, and National Bag follows through with a printing order; they pay the bills for printing, stockpiling, and shipping of the Ad-Bags and pay the paper merchants for their sales work. Thus the bag manufacturer, the grocer, the paper merchant, and the national advertiser all benefit from the arrangement. J.A.B.

REEVES, ZOE. Unusual folds and die-cuts add appeal to sales pieces. Inland Printer 124, no. 6: 52-5 (March, 1950).

Illustrated examples are given of novel greetings and sales folders whose purpose is to capture the reader's attention and hold his interest until he has read the entire message. Diagrams indicate the method of cutting and folding each of the illustrated designs. 17 illustrations and 17 diagrams. J.A.B.

ALUM

ANON. Alum—and its uses in paper making. Can. Pulp Paper Ind. 3, no. 3: 24 (March, 1950).

Papermakers' alum, or aluminum sulfate, is a coarse, granular material (about 20 mesh), with a yellowish color. Its prime purpose is to set the rosin size in the beater, and many colors require alum for their proper fixture on the paper fibers; it also assists materially in the general running qualities of the sheet over the paper machine. The amount of alum furnished to the stock is usually controlled by testing the pH at various points. J.A.B.

ASSOCIATIONS

JONES, DOUGLAS. Review of activities of the Technical Section 1949. Pulp Paper Mag Can. 51, no. 3: 119-22 (Convention, 1950); *cf.* B.I.P.C. 19: 530.

The report of the Secretary-Engineer, Technical Section, Canadian Pulp and Paper Association, covers membership, finance, staff changes, constitution, 1949 summer meeting, branch and committee activities, liaison with the Research Institute, publications, and Technical Section awards for the year 1949. E.S.

MACDONALD, R. G. Report of the Secretary. Tappi 33, no. 3: 58A, 60A, 62A, 64A, 66A (March, 1950); Southern Pulp Paper Manuf. 13, no. 3: 56, 58 (March, 1950); Paper Trade J. 130, no. 8: 112-13 (Feb. 23, 1950); Paper Mill News 73, no. 8: 82, 84, 130, 134 (Feb. 25, 1950); *cf.* B.I.P.C. 19: 530.

The text of the annual report for 1949 of the Secretary-Treasurer of the Technical Association is presented, covering membership, necrology, meetings and conferences, publications, employment, local sections, and divisions and committees, including officers and personnel changes. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Condensations of annual meeting papers. Tappi 33, no. 3: 69-70A, 72A, 74A, 76A, 78A, 80A, 82A, 84A, 86A (March, 1950); Paper Mill News 73, no. 8: 48, 88, 90, 92, 94, 96, 98, 100 (Feb. 25, 1950); Southern Pulp Paper Manuf. 13, no. 3: 59-60, 62, 64 (March, 1950); Paper Ind. 31, no. 12: 1470-3; 32, no. 1: 92-5 (March, April, 1950); *cf.* B.I.P.C. 19: 611.

Abstracts of the papers presented at the annual TAPPI meeting in February, 1950 in New York are given. The selection and sequence of the abstracts varies in the different references. E.S.

BEATING

KILPPER, WILHELM. Classification of papermaking fibers. Das Papier 4, no. 3/4: 33-7 (February, 1950). [In German] *cf.* B.I.P.C. 20: 382.

The author developed and describes criteria for characterizing changes in fiber dimension with beating. Thus the specific beating development (I) of a pulp is defined as the increase in degrees Schopper-Riegler after beating for 30 minutes in a Jokro mill, under specified conditions. (I) was very slight in the case of highly purified kraft pulps (1-3) and in well purified sulfite pulps (6-8); it was high for unbleached and bleached sulfite (31-52) but relatively low in bleached sulfate pulps (5-9), intermediate in unbleached kraft (17) and highly variable in the case of cotton, ranging from 6 for a new cotton to 50 for a tenderized one. (I) for linen fibers was 20. Another criterion was the specific fiber-length shortening (II) obtained after beating for 10 minutes and after 1 hour (calculated in either case as percentage loss in the mean fiber length of the original material). The author also calculated such percentage losses after beating to 20 and 60° S.-R. in a Jokro mill. (II) varies greatly, ranging from 1.25 (after 10 minutes' beating) in the case of a highly purified kraft pulp to 52.9 for a bleached sulfite. (II) naturally increases very rapidly with time or with increasing degrees S.-R. A series of seven graphs shows the relationships between mean fiber length and beating time. 1 table. L.E.W.

BIOCHEMICAL TESTING

GEHM, HARRY W. Adaptation of the B.O.D. test to pulp and paper mill wastes. Tappi 33, no. 3: 124-6 (March, 1950).

Uses, advantages, and shortcomings of the B.O.D. test are discussed in relation to its use in pulp and paper mill effluents. Recommendations regarding modifications and applications to specific pollution problems are made, and results of oxidation-rate tests made on several pulp and paper mill wastes by this method are reported and compared with the established rate for sanitary sewage. The rate of oxygen consumption by aerobic decomposition of various types of fiber is compared, and data concerning the effect of fiber on long-time B.O.D. rates are presented. 2 tables, 1 figure, and 10 references. E.S.

BLEACHING

SANDY HILL IRON & BRASS WORKS. Kamyr process for high quality pulp. Paper Mill News 73, no. 12: 54, 56 (March 25, 1950); Southern Pulp Paper Manuf. 13, no. 3: 66, 76 (March, 1950); Tappi 33, no. 4: 40A, 42A, 44A (April, 1950); Fibre Containers 35, no. 4: 80-1 (April, 1950).

A brief illustrated description of recent bleaching equipment by Kamyr is given, including the continuous chlorination tower, the Sandy Hill-Kamyr high-density tower, the pre-impregnation system for high-density pulp, and the vacuum washer. 10 illustrations. E.S.

BLEACHING—GROUNDWOOD

JONES, GARY W. The effect of sodium peroxide bleaching on the components of eastern spruce groundwood. Tappi 33, no. 3: 149-60 (March, 1950).

The present investigation has resulted in several general conclusions concerning the effect of sodium peroxide bleaching upon eastern spruce groundwood. These conclusions have particular reference to a typical 2% sodium peroxide bleach (calculated on the basis of the moisture-free pulp) at approximately 5% consistency. They are as follows: As evaluated in terms of current wood analysis procedures, sodium peroxide bleaching does not cause any large-scale chemical changes in the known components of spruce groundwood. During a normal groundwood bleaching operation, the total lignin is responsible for about 40% and the holocellulose for about 60% of the total sodium peroxide consumed. The ether and ethanol extractives are of minor importance with regard to an over-all peroxide consumption balance, since they apparently are accountable for only 1 to 4% of the total peroxide consumption. Optical data suggested qualitatively that the major bleaching effect exerted by sodium peroxide upon spruce groundwood can probably be attributable to its reaction with the lignin. It was found that methylation of isolated native lignin in anhydrous ether suspension with diazomethane or with absolute methanol in the presence of hydrogen chloride markedly inhibits its reaction with sodium peroxide. Accordingly, it was deduced that sodium peroxide attacks lignin primarily through a portion of the carbonyl groups (and possibly the phenolic hydroxyl groups) in the lignin structure. Kinetic and analytical studies of the reaction between sodium peroxide and isolated native lignin indicated that lignin is composed of two or more fractions which are essentially the same in elementary composition and methoxyl content, but which differ from each other with respect to their intrinsic color and chemical reactivity toward sodium peroxide. It was suggested that the bleaching action of sodium peroxide upon spruce groundwood may be the result of a chemical reaction between this reagent and the more highly

colored lignin fractions. Furthermore, the remarkable efficiency of the bleaching action may possibly be attributable to a relatively high specificity on the part of sodium peroxide toward these particular fractions. 7 tables, 8 figures, and 23 references. E.S.

PEAT, DAVID W. Production of bleached mechanical wood pulp. Pulp Paper Mag. Can. 51, no. 3: 218-27 (Convention, 1950).

Following a brief review of earlier attempts to bleach groundwood pulp to a higher brightness, the two methods presently used on a large scale are described in detail, i.e., the bleaching procedures with zinc hydrosulfite and hydrogen or sodium peroxide, including equipment, corrosion problems, sequence of operations, results, and future developments. 1 table, 9 figures, and 17 references. E.S.

BLEACHING—SULFATE

MACLEOD, KEITH S. Chlorine dioxide bleaching of kraft pulps. Pulp Paper Mag. Can. 51, no. 3: 156-8 (Convention, 1950); Paper Ind. 32, no. 1: 90-2 (April, 1950).

The use of sodium chlorite or chlorine dioxide as a pulp bleaching agent for obtaining both strength and brightness is described. The three general methods of application are outlined, and certain variables (gas ratios, pH, reaction time, and temperature) are discussed. The results obtained in two different kraft mills are mentioned. In conclusion, reference is made to the equipment required in a mill for the generation of chlorine dioxide from sodium chlorite. 1 diagram. E.S.

BOARD MILLS

ANON. Another pulpboard plant uses Douglas fir waste as material. Pulp & Paper 24, no. 3: 80 (March, 1950).

A brief illustrated description of the new hardboard plant of Forest Fiber Products Co. is given, which operates in conjunction with the Stimson lumber mill at Forest Grove, Ore., and utilizes its bark-free Douglas fir waste. The principal machinery includes a Sumner Iron Works six-knife chipper, an Asplund Defibrator, two Bauer pulpers, a Downingtown Fourdrinier, and a hydraulic press. The stock is mixed with 0-8% phenolic resins, depending on the end product, which is sold under the trade name "Forest Hardboard." 4 illustrations. E.S.

BOARD SPECIALTIES

CAM, R. H. BOYCE. Expendable pallets save packing and handling costs. Brit. Packer 12, no. 2: 27-30 (February, 1950).

The use of expendable pallets in Great Britain has been delayed by the shortage of fiberboard material, but this is now available and production has begun. The advantages of this type of pallet are surveyed, and examples are given of their possible uses. By means of a graph, it is shown that for distances up to 250 miles, returnable pallets are practical, but for greater distances, the lighter expendable pallets are much more economical. These pallets can be designed to carry almost any type of product and are capable of holding individual pallet loads up to one ton. The British packing technique is illustrated. 1 graph, 16 illustrations, and 3 references. J.A.B.

BUSINESS CONDITIONS

STEVENSON, LOUIS T. Some lessons from the 1949 recession. Paper Ind. 31, no. 12: 1404-5 (March, 1950); *cf.* B.I.P.C. 18: 670.

The author analyzes the difference in the business cycles of the two post-war periods from 1920-22 and 1948-49. The second of these periods represents a major cyclical decline and recovery in production without a collapse in the price level, whereas the drop from the peak of 1920 was precipitate, and the bottom was a catastrophic 55% below this peak. The intervening factor in 1949 was the maintenance of personal expenditures of consumers at the same level in 1949 as in 1948. The consuming public had money and was willing to spend it, and this spending continued, although production slowed down. A contributory factor was the conservative inventory position. Oversupplies in inventories along the distribution line were soon exhausted and the buyers were back in the market. The lesson to be learned from these happenings is that a decline in business need not be disastrous if inventories are maintained on a conservatory level and plenty of buying power is left in the hands of consumers. 3 charts. E.S.

SWINGLE, WILLIAM S. Our position as world traders. Paper Trade J. 130, no. 12: 21-3 (March 23, 1950).

The author analyzes some of the important current considerations (ERP, U. S. exports and imports, devaluation, the Point IV Program and foreign investments, etc.) and their effect on the economy in the United States and world trade in general. E.S.

CASEIN

SMULLEN, GEORGE C. The casein situation. Paper Trade J. 130, no. 8: 89-90 (Feb. 23, 1950).

Because of the unexpected diversion of skim-milk to the manufacture of powder, the total domestic production of casein amounted to only 20,000,000 pounds, and the country was forced to import casein to satisfy requirements. Argentina supplied 12,519 metric tons; consumers did not receive any benefit from the currency devaluation. Other casein-producing countries do not have any substantial quantities available for export. Stocks of casein throughout the world are undoubtedly low and casein will be reasonably tight until the U. S. flush season starts. This period will set the course of supply and price for the balance of the year. 4 tables. E.S.

CAUSTIC SODA

OTHMER, DONALD F., and SILVIS, SALVATORE J. Correlating viscosities; caustic soda solutions. Ind. Eng. Chem. 42, no. 3: 527-8 (March, 1950).

Viscosities of solutions of solids in liquids or of mixtures of liquids have been correlated on a logarithmic plot against vapor pressures or viscosities of a reference substance at the same temperature. In the important case of aqueous solutions of caustic soda, the plot of viscosity against the viscosity of water eliminates the break in the function otherwise experienced at 40° C. A nomograph is presented. 3 figures and 8 references. E.S.

CELLOPHANE

KRAFT FOODS COMPANY. Cheese in slices. Modern Packaging 23, no. 7: 112-14 (March, 1950); Food Inds. 22, no. 4: 607-8 (April, 1950).

Process cheese in uniform slices, distinctively packaged at the factory immediately after pasteurization, has been market-tested by the company and will soon be available nationally. Rubber-wax-coated, heat-sealed cellophane is used to wrap eight one-ounce slices, which will not stick together under any temperature variations. The marketing of such packages elimi-

nates the necessity of costly, time-consuming slicing, weighing, and packaging at the retail store and assures the consumer of a sanitary, uniform product. The increase in retail sales has been as high as 400% in some cases. Machinery for making the cheese in slices and for automatic wrapping and sealing has been specially designed by Kraft and is highly confidential. 5 illustrations. J.A.B.

CELLULOSE

HEUSER, EMIL. Trends in fundamental research in the cellulose and wood pulp field. Tappi 33, no. 3: 118-24 (March, 1950).

The trends covered in the cellulose field include investigations of the submicroscopic structure of cellulose; methods for determining the ratio between crystalline and amorphous portions; the study of the average molecular weight or chain length; cross linkages; and derivatives. In the pulp field, the discussion covers the determination of the average chain length and chain-length distribution of pulp fibers and changes resulting from cooking, bleaching, and purification procedures; better methods for predicting the performance of a given pulp for a special purpose; the influence of noncellulosic carbohydrates; continuous cooking; the use of magnesia base in sulfite pulping; and other topics. 86 references. E.S.

KASSER, ALEXANDER. Modern theories on the constitution of cellulose. Papeterie 72, no. 2: 58-9, 61, 63, 65, 67 (February, 1950). [In French]

The author reviews methods of pulp production as well as the constitution of cellulose. 53 references. L.E.W.

CELLULOSE—DEGRADATION

BATTISTA, O. A. Hydrolysis and crystallization of cellulose. Ind. Eng. Chem. 42, no. 3: 502-7 (March, 1950).

A comprehensive study has been made of the effect of time on the weight loss and D.P. of ten representative samples of cellulose using both mild (5.0 *N* hydrochloric acid at 5, 18, and 40° C.) and drastic (2.5 and 5.0 *N* hydrochloric acid at the boiling point) conditions of hydrolysis. The samples were purified cotton, bleached cotton linters, cotton linters pulp, wood pulp, textile rayon, tire yarn, Fortisan, Fiber G, and two experimental rayons. The percentage crystallinity as measured by acid hydrolysis (based on weight of residue) and the leveling-off D.P. are shown to be dependent on whether mild, drastic, or mild plus drastic conditions of hydrolysis are employed. The use of 2.5 *N* hydrochloric acid at 105° C. for 15 minutes is recommended as the optimum condition for measuring weight loss or relative crystallinities and leveling-off D.P.'s in conjunction with the apparatus described. On the basis of weight loss and D.P. data, mechanisms are proposed to account for the crystallization of cellulose chains simultaneously with chain splitting under conditions of mild and drastic hydrolysis, respectively. The effect of crystallization on hydrolysis was found to be more pronounced for regenerated celluloses than for native celluloses. 6 tables, 6 figures, and 25 references. E.S.

CELLULOSE—SORPTION

CHAMPETIER, G., and NÉEL, J. Addition reactions and the formation of molecular compounds in heterogeneous "polymer-binary liquid" systems. Application to cellulose hydrates and the alkali celluloses. Bull. soc. chim. France no. 11-12: 930-7 (November-December, 1949). [In French]

The concept of addition-compound formation by macromolecules is discussed. The "method of residues" is described and its validity as a means for determining whether addition compounds are formed is examined. The theory underlying the method is presented. The "method of residues" consists of the following steps: (1) the solid polymer is swollen to equilibrium in a homogeneous binary liquid mixture; (2) the swollen polymer is removed from the liquid and cut into fractions; (3) the liquid retained by each fraction is partially removed by some mechanical means (pressure, centrifugation, etc.) to produce a different solid-liquid ratio in each fraction; (4) the fractions are analyzed chemically and the results plotted in a simple manner; and (5) the procedure is repeated for several different compositions of the binary liquid. The plots obtained are interpreted in terms of the theory presented. Experimental data are given for the systems: cellulose-water-sodium thiosulfate, cellulose-water-pyridine, and cellulose-water-sodium hydroxide. The results are interpreted in terms of the formation of cellulose hydrates and alkali celluloses. The resultant conclusions are compared with those reached by other methods. 7 figures and 17 references. J.O.T.

CELLULOSE ESTERS—NITROCELLULOSE

PICTON, N., and KELLAND, N. S. Manufacture of dense industrial nitrocellulose from woodpulp. Ind. Chemist 26, no. 301: 79-80 (February, 1950).

Following a brief review of earlier methods of preparing nitrocellulose for industrial applications, a method is described which recently has been fully developed at a Scottish factory and which produces nitrocellulose from wood pulp. This product exhibits characteristics of nitrogen content, degree of nitration, and viscosity as suitable as those of nitrated cotton linters for application in the plastics and lacquers industries. A 10:1 acid-to-cellulose ratio, much lower than is necessary for linters, is possible because of the relatively compact form of the cellulose. In the manufacture of a lacquer-grade nitrocellulose, nitration is carried out at 45° C. for two hours, and stabilization and viscosity reduction is achieved by kiering for two hours at 140° C. The absence of fine fibers generally results in a dense nitrocellulose which disperses into a lacquer base, or which plasticizes to a celluloid of improved clarity. 1 table and 6 references. J.A.B.

CHEMICAL TESTING—CELLULOSE

WINDECK-SCHULZE, K., PIEPER, J., DAHL, E., and NINGEL, M. The quantitative determination of cellulose by oxidation with dichromate. Melliand Textilber. 29, no. 1: 20-3; no. 2: 55-7 (January, February, 1948). [In German]

The dichromate method of Zimmermann (*cf.* B.I.P.C. 13: 186-7) is critically evaluated and certain improvements are described. It was found that varying the alkali concentration of the cellulose solution, prolonging the period of aging or hydrolysis, and increasing the sulfuric acid concentration did not improve the accuracy of the analytical results. In one modification, potassium ferricyanide is used as the indicator in the place of ferroin; by changing the hydrolysis conditions, reproducible yields of approximately 97% of the total amount of cellulose are obtained, calling for a positive correction of 3%. In another modification, ferroin can be used as the indicator if the volume of the titrating solution is doubled, the temperature reduced to 20° C., and the indicator added almost at the end of the titration. In this case, the reproducible yields amount to 97.5%, calling for a positive correction of 2.5% of cellulose. A third economical modification (in which either of the two indicators can be used) was developed for reducing the consumption of the chemical reagents. 4 tables and 11 references. E.S.

CHEMICAL TESTING—CELLULOSE ESTERS

GENUNG, LEO B. Analysis of cellulose derivatives. Anal. Chem. 22, no. 3: 401-5 (March, 1950).

Cellulose derivatives, because of their high-polymeric, carbohydrate structure, require modifications of conventional methods of organic analysis. Conditions of temperature, time, and reagent concentration must be kept within prescribed limits in order to avoid interfering side reactions and obtain accurate results. The acetyl content of cellulose acetate is ordinarily determined by saponification. Heterogeneous methods (saponification in suspension) are generally used, but methods based on saponification in solution have several advantages and are practical when the solubility behavior of the sample is known. Mixed esters of cellulose may be analyzed by the partition method, by isolating one acid by an extraction method, or by determining characteristic groups, such as halogen, alkoxyl carboxyl, or hydroxyl, in addition to total acyl content. Cellulose nitrate is analyzed by converting the nitrate group to nitric oxide and measuring the latter volumetrically. Methyl and ethyl ethers of cellulose are analyzed by modern versions of the Zeisel method and carboxymethylcellulose by titration of its carboxyl groups. Salts of the latter derivative may be analyzed by the methods of inorganic analysis after careful removal of organic matter. Precision is readily measured, but accuracy is difficult to establish because samples of known composition are not available. Complete analyses of some representative samples give an indication of the over-all accuracy of the methods employed. 2 tables, 7 figures, and 26 references. E.S.

CHEMICAL TESTING—PULP—CUPRAMMONIUM VISCOSITY

LAUNER, HERBERT F., and WILSON, WILLIAM K. Preparing cuprammonium solvent and cellulose solutions. Anal. Chem. 22, no. 3: 455-8 (March, 1950).

A critical review of the literature suggested the possibility of preparing cuprammonium reagent by dissolving solid cupric hydroxide in ammonium hydroxide and of protecting the cellulose from oxidation during dispersion by the addition of metallic copper or cuprous chloride. This simple method of protection makes possible the use of Erlenmeyer flasks as dissolving vessels instead of more complicated equipment. The following very simple procedure was devised. The cuprammonium reagent was prepared by dissolving solid cupric hydroxide in ammonium hydroxide in an ice bath. The solution of cellulose in cuprammonium was prepared in rubber-stoppered Erlenmeyer flasks by mechanical agitation of the cellulose and the cuprammonium solution, to which cuprous chloride and copper wire had been added. The time of flow of the solution was measured in a viscometer enclosed in a glass jacket thermostatted by water pumped from a constant-temperature water bath. This procedure saved time, and the results compared favorably with those obtained with a more orthodox method. 2 tables, 1 figure, and 39 references. E.S.

CHEMICAL TESTING—SULFITE WASTE LIQUOR

BRAUN, KARL, and KRAUSE, GERD. Rapid method for determining volatile organic acids (calculated as acetic acid) in sulfite waste liquors. Das Papier 4, no. 3/4: 44-8 (February, 1950). [In German]

The liquor (10 cc.) is treated with sufficient 0.1 *N* (or 1 *N*) chloramine to oxidize the sulfur dioxide in solution. The treated liquor, in a distilling flask connected with a condenser dipping into a receiving flask containing 20 cc. of carbon dioxide-free distilled water in a glycerin bath at 130-140° C.

was distilled to dryness and thereafter kept at 130° C. for 5 minutes. After cooling, 10 cc. of distilled water are added to the dry residue and the mixture is redistilled to dryness and reheated at 130° C. The combined distillate is heated with 5 cc. of potassium iodide-starch solution, and accurately titrated with chloramine to a pale blue color (discharged by one drop of 0.1 *N* sodium thiosulfate); two drops of phenol red are then added and the mixture is titrated to a red end point with 0.1 *N* sodium hydroxide. The difference between the final titration and that with chloramine is a measure of the organic acid (calculated as acetic acid). The authors also studied the ethyl ether extraction method of Doering (*cf.* B.I.P.C. 14: 384) which, with slight modifications (i.e., exhaustive extraction and prevention of emulsions) gave excellent results. The results of the distillation and extraction methods were in good agreement, unless the original liquor was extremely dark (e.g., in the production of soft pulps). In such cases the distilling method gave values that were much too high because of the secondary formation of volatile organic acids not originally present in the liquor. This was obviated when the original liquor was titrated with aqueous barium hydroxide to pH 2.3 prior to the distillation. 3 tables and 3 references. L.E.W.

CHEMICALS

MISPLEY, R. G. The western pulp and paper industry as a consumer of chemicals. Calif. J. Mines Geol. 45, no. 3: 459-64 (July, 1949).

The pulp and paper industry is one of the largest consumers of chemical raw materials in the United States; these materials are used in every stage of manufacture. The author discusses briefly the various chemicals employed in pulping and bleaching, as well as fillers, sizes, coating materials, dyestuffs, and miscellaneous chemicals. Some of these can be procured in any part of the country, whereas others are indigenous to one section. The opportunities for the development of western resources are outlined, including clay, alum, guar gum, potato starch, and peroxide. General statistical information on the approximate annual consumption of chemicals by the pulp and paper industry is included; the source of the Pacific Coast supply is indicated. 4 tables. E.S.

WALSH, J. M. Market review of caseins, rosins and resins. Paper Trade J. 130, no. 8: 92-3 (Feb. 23, 1950); *cf.* B.I.P.C. 19: 536.

The author discusses the consumption, prices, and supply situation during 1949 and the outlook for 1950 for casein, rosin and rosin size, and melamine- and urea-formaldehyde resins. 2 tables. E.S.

CLAY

VAN WAZER, JOHN R., and BESMERTNUK, EVELYN. The action of phosphates on kaolin suspensions. J. Phys. Colloid Chem. 54, no. 1: 89-106 (January, 1950).

The deflocculating action of phosphates on clays is described, and rheological data for a number of kaolin-phosphate-water systems are reported. The observations are interpreted in terms of the structure of phosphates and of clays, and a theory is proposed to explain the mechanism of the plasticity of clay-water systems. 2 tables, 9 figures, and 29 references. J.O.T.

COLOR

SINCLAIR, WILFRED D. Color conditioning in the pulp and paper industry. Can. Pulp Paper Ind. 3, no. 3: 8-10 (March, 1950).

Color conditioning is a scientific design for plant maintenance based on years of research in color knowledge, illuminating engineering, good painting practice, psychological data, and studies of eyes and eyesight. The object of color conditioning is the improvement of the brightness of a room by the reflection and distribution of incident light, using colors which are relaxing and cheerful. The paper machine room in a paper mill is used as an example, and a suitable color scheme is worked out. Fume-resisting eggshell white is recommended for the ceiling and side walls down to the crane rail, aluminum paint for the crane rail, a semigloss finish in soft green for the upper walls and window sash, a glossy green for the dado, and three colors for the paper machine: rich copper brown for the wet end, light grey-green for the dry end, and the green of the wall for the drier hood. A safety color code has been set up by the engineering societies, in which colors act as signals for safety, e.g., yellow to indicate danger, red for fire-fighting equipment, and blue for switches. Color conditioning manuals are available which contain instructions for conditioning an entire plant. 3 illustrations. J.A.B.

COLORIMETRY

ANON. Are your colors drifting? Packaging Parade 18, no. 206: 38-9, 64-5 (March, 1950).

A satisfactory method of controlling color on packaging materials and preventing color from drifting during production runs has been developed by Colgate-Palmolive-Peet Co., Jersey City. The initial selection of the desired color is made visually, and its production tolerance limits are established with consideration for cost, ease of reproduction, unavoidable variations resulting from mechanical limitations of presses and normal stock differences, and visual acceptance. Since no colored materials are absolutely permanent, a physical specification is also furnished to suppliers as a fundamental primary standard for color control. A permanent specification is provided by a spectrophotometric curve, which indicates spectral reflectance, the most important single factor affecting color sensation. These curves establish whether or not a working standard has changed sufficiently to warrant substitution of a new standard and, when replacement is necessary, they determine whether a match within the tolerances has been made. Another method of control involves the use of color standards, in the form of square blocks of the desired color, which accompany purchasing specifications. 2 graphs and 6 illustrations. J.A.B.

JUDD, DEANE B. The 1949 scale of color temperature. J. Research Natl. Bur. Standards 44, no. 1: 1-8 (January, 1950).

Because of the revision of the International Temperature Scale to use the Planck radiation formula instead of the Wien, with a new value assigned to the constant c_2, the scale of color temperature in use at the National Bureau of Standards since 1934 has been revised. The details of this revision are given, and the results are summarized in a table showing the conversion of color temperature on the 1934 scale to that on the present, or 1949, scale. The use of lamp standards of color temperature to obtain known spectral distributions of radiant flux between 380 and 770 mμ is discussed, and comparisons are made between the 1922 scale of color temperature and the 1934 and 1949 scales for this purpose. 7 tables and 13 references. E.S.

COMPRESSED AIR

MARSH, R. A few notes on air conveying. Proc. Tech. Sect., Paper Makers' Assoc. Gt. Brit. & Ireland 29, no. 1: 91-4; discussion: 94-6 (June, 1948); *cf.* B.I.P.C. 19: 23.

Complementing the paper by Peirce on the use of centrifugal pumps in the pulp and paper industry, the author indicates some of the general possibilities of conveying fibrous materials by air. Whereas 6% is given as the maximum consistency at which centrifugal pumps should be employed, air can be used at any consistency from 4 to 10%, and again from 25% to ovendry. The advantages and limitations of both methods are compared. E.S.

CORROSION

HUSEBY, R. A., and SCHEIL, M. A. Corrosion and corrosion testing in the pulp and paper industry. Tappi 33, no. 3: 138-48 (March, 1950).

General corrosion, pitting, intergranular attack, stress corrosion cracking, galvanic corrosion, dezincification, and erosional corrosion are discussed with examples from the pulp and paper industry. Appropriate remedial measures such as alloy selection and heat treatment are included. The pronounced effect of carbon content on pitting tendency in both laboratory and field tests is illustrated. It is shown that increased corrosion resistance in the ammonium bisulfite process can be effected by keeping the chromium content of type 316 analyses on the high side of the range. Metallurgical considerations in the fabrication of alloy-lined equipment are discussed. 3 tables, 25 figures, and 2 references. E.S.

COST—ACCOUNTING

GURR, A. F. Maintenance cost control and some elements of a uniform accounting system. Pulp Paper Mag. Can. 51, no. 3: 123-6 (Convention, 1950).

The control of maintenance costs is one of the most difficult problems with which management has to contend. One of the difficulties is the physical differences which exist among the various producing units in a single mill or between different mills. The maintenance cost of a new, modern, wide, fast-running paper machine cannot be compared with that of an old, narrow, slow-running machine. Other factors include the prevailing rates for labor and prices for materials, the procurement of machine parts from the machine shops or outside sources, and the overworking and amount of use to which the equipment is subjected. New equipment normally requires less maintenance than old equipment; different policies of management regarding upkeep have a great deal to do with the size of the maintenance costs. A general procedure for setting up a control system of accounting is outlined, including the handling of operating and maintenance expenses and the repair-shop and overhead costs. The importance of frequent comparisons between departments and with past performances, the setting up of a maintenance budget, and the adherence to this budget is stressed. Careful planning and foresight and wholehearted co-operation between top management and all the departments concerned are essential for final success. E.S.

Ross-Ross, D. Maintenance cost control; the need for standardization. Pulp Paper Mag. Can. 51, no. 3: 134-8 (Convention, 1950).

The cost of maintenance in 75 industries for 1946 is tabulated; it constitutes about 5.5% of the sales value of products in the pulp and paper industry. It is generally recognized that this cost is one of the most difficult to control. Many ways have been devised in an effort to reduce maintenance expenses to a minimum, such as adequate cost control systems employing tabulating cards and budgetary systems, with or without a monetary incentive for the maintenance supervisory staff and actual wage incentives for all shop employees. The fine paper industry in Canada is sharing information in which

maintenance costs per ton or per hour (in the case of paper machines) are compared. However, the standardization of accounting methods is essential if useful figures are to be obtained. Further studies are being conducted with a view to relating such costs to insurable values of plant and equipment, and sales dollars. If studies of maintenance costs could be conducted over a broader field than the Canadian fine paper industry, these figures would become even more valuable. The Engineering Division of TAPPI has set up a strong subcommittee of the Maintenance and Materials Committee to deal with this problem and a co-operative effort has been promised by American mills. 3 tables and 1 diagram. E.S.

SYLVESTER, L. ARTHUR. Standard costs for boxmakers. Fibre Containers 35, no. 3: 30, 32, 37-8 (March, 1950).

In order to develop adequately all profit possibilities and assure stability and maximum competitive power, management must exercise control over all the elements of a standard cost system. The five major parts of a standard cost system, which are illustrated diagrammatically, are: product cost, labor control, expense control, waste control, and a flexible budget for the control of selling and administrative cost. The three basic methods of costing common in box plants are: the job or order cost system, in which the actual time spent on each order is recorded; the process cost system, in which the total number of boxes or the total thousand square feet, or both, are tabulated daily; and the standard cost system, in which the production passing through each operation or machine is priced at a predetermined standard cost and in which the actual cost is compared with the standard once a week. The requirements for a good cost system are promptness, clarity, and accuracy. 1 table and 3 figures. J.A.B.

DIE-CUTTING

ARNESON, LAWRENCE E. Steel rule die review . . . function, application in boxmaking. Am. Boxmaker 39, no. 3: 23-6 (March, 1950).

The steel rule die is essentially a multiplicity of steel rules approximately 1/32 inch thick and 15/16 inch high, arranged in perpendicular position and spaced according to a predetermined pattern, using plywood block or machined metal for spacers. The method of making a steel rule die is outlined, and the advantages of a wood block die over the metal type are pointed out. The theory and practice of cutting and creasing machines are discussed, the most popular type being the high-speed, two-revolution cylinder press; platen, reciprocating, and rotary presses are also described and their relative merits listed. The preparation of a steel rule die for the cutting-creasing operation is outlined. 5 illustrations. J.A.B.

DYES AND DYEING

NORTH, F. Some variables in the colouring of paper. Proc. Tech. Sect., Paper Makers' Assoc. Gt. Brit. & Ireland 29, no. 1: 127-53; discussion: 154-7 (June, 1948); Indian Pulp and Paper 4, no. 8: 316-22 (February, 1950).

Following a brief survey of the rather scanty, pertinent literature, the author describes the effects of some variables, pH in particular, on the coloring of paper; the present study is merely a beginning in a long-range research program designed to attack the problem of paper dyeing from all angles. The author proposes a theory according to which the process of paper coloring consists of two stages: (I) adsorption of the dyestuff from the solution by the cellulose before the addition of sizing agents and (II) the formation of a complex precipitate after the sizing agents have been added

and the retention of this precipitate by the fibers. (I) is negligible with most acid dyestuffs, small with basic dyestuffs, and extensive with direct dyestuffs; it is the major factor in coloring with this last class of dyestuffs. There is very extensive literature on the straightforward adsorption of direct dyestuffs by cellulose from the textile viewpoint, and the process has been fairly well investigated. With (II), the effect of pH variations can be explained to some extent by assuming that the dyestuff is adsorbed by hydrous alumina, which is produced by the hydrolysis of aluminum sulfate on dilution. Unfortunately, it is difficult to reconcile the behavior of rosin with this theory, which is practically contradicted by the effect of rosin on the dyestuff retention of acid dyestuffs. Further fundamental work on paper coloring and rosin sizing should help to clarify this point. The most important single variable in paper dyeing on a given furnish is the pH value. A number of commonly used dyestuffs have been examined and their optimum pH values determined; the results are given in tabulated form. 11 tables, 5 diagrams, and 36 references. E.S.

ENGINEERING

SANDWELL, P. R. Development engineering in the pulp and paper industry. Pulp & Paper 24, no. 3: 44, 65-6 (March, 1950).

An analysis is presented of the economic and technical background of development engineering in the industry and the theoretical and experimental methods of accomplishing it. Because of the high ratio of capital investment to the value of the product, there is a widespread inclination by all concerned with a new plant to avoid, during construction, the risks that go with new developments. A decision regarding a new plant should be based on a reasoned analysis of what should be done in a particular situation and not on an imitation of what others are doing. There is a great need in the industry for new developments similar to the hydraulic barker. Theoretical methods for new developments include the collection of data recorded by others and personal observation, with particular reference to photographic tools and study of the charts recorded by instruments. Experimental methods which will reduce the risk in development engineering include small-scale or laboratory experiments and the use of scale models. The construction of an experimental pulp and paper mill, similar to the one existing in Sweden, is advocated; the author is convinced that the cost of such an undertaking is justified. In conclusion, co-operative efforts in development engineering are discussed. No engineer is so competent that his ideas cannot be improved by other people. This is not difficult in small organizations. However, on large projects, formal means of exchanging ideas between all those interested in them are essential. Members responsible for the various interested groups must be provided with complete data as the project proceeds. An acknowledgment should be requested that they have received and studied the design information; if they have no comments to make, the fact should be recorded that they have none. E.S.

ENZYMES

SCHUBERT, E. The evaluation of enzymatic desizing agents. Textil-Rundschau 3, no. 9: 295-304; no. 10: 335-41 (September, October, 1948); Am. Dyestuff Reptr. 39, no. 6: 181-9, 202 (March 20, 1950). [In German and English]

Following a brief explanation of the composition and characteristics of starch, the action of enzymatic desizing agents is discussed and the present knowledge of starch-splitting enzymes reviewed. Commercial desizing preparations contain either pancreatic, bacterial, or malt amylases; bacterial and

pancreatic amylases are pure α-amylases, whereas malt contains both α- and β-amylase. The customary methods of measuring amylase activities are: liquefaction, which measures only α-amylases; saccharification, which measures both α- and β-amylases, each independently; and dextrinization, which measures a combination effect of the two or α-amylase alone. In the presence of sufficient β-amylase, the dextrinization effect of α-amylase is up to five times as great as without β-amylase, but β-amylase alone has no dextrinization effect and thus no desizing power. For determining the effective desizing value of some preparations, all analytical methods are worthless, and only a practical desizing test is of any value. It was found that even when the sources of amylases are identical, the desizing value will not agree with the analytical values. A desizing test is described. 9 tables, 16 figures, and 52 references. J.A.B.

EVAPORATION AND EVAPORATORS—SULFITE WASTE LIQUOR

ANON. First report on Appleton tests sulfite evaporation. Pulp & Paper 24, no. 3: 36-7 (March, 1950).

A brief illustrated description of the experimental Conkey flat-plate heating surface evaporator at the Interlake mill of the Consolidated Water Power & Paper Co., Appleton, Wis. (operated by the Sulphite Pulp Manufacturers' Research League) is given, which utilizes the Rosenblad channel-switching system for avoiding scale formation on the heating surfaces. The single-effect unit reduces comparatively strong (undiluted) sulfite waste liquors to approximately 50-55% solids at the rate of 300 gallons per hour. A large percentage of this condensed liquor is being shipped to firms which are developing combustion equipment. The evaporated liquor has a high B.t.u. content; however, the disposal of the calcium-base fly ash (about 200 lb./ton of pulp) poses a serious problem. Unfortunately, some of the largest sulfite mills are in regions where there seems to be absolutely no demand from farmers for use of this ash as fertilizer, the only important possible outlet now known. 6 illustrations. E.S.

ELGEE, H., CRAIG, D., and RUSSELL, J. K. Thermal compression evaporation of waste sulphite liquor; a pilot plant study. Pulp Paper Mag. Can. 51, no. 3: 178-89 (Convention, 1950).

The application of thermal compression to the evaporation of sulfite waste liquor has been studied on a pilot-plant scale in a unit producing one ton of 50% solids per day. Energy requirements were found to be 22 kw.-hr./1000 lb. of evaporation, and it is estimated that with a commercial-scale unit producing 50 tons per day of 50% solids product, energy requirements would be reduced to about 13.5 kw.-hr./1000 lb. of evaporation. Steam requirements with an extraction turbine of 70% efficiency are estimated at 58.5 lb. of steam from and at 212° F./1000 lb. evaporation. An average rate of evaporation of 3.22 lb./sq. ft./hr. was obtained with raw liquor at a compressor pressure differential of 5-6 p.s.i. The scaling of heat-exchange surfaces was severe, but the scale could be removed readily by recirculation of recovered distillate on a four-hour cleaning cycle for each 20-hour operating period. No improvement in scaling was obtained from high-temperature pretreatment of the feed. Scale which formed from liquor treated with small amounts of foam inhibitors appeared to be more easily removed. 11 tables, 12 figures, and 7 references. E.S.

FRANKLIN, J. N., and GODDARD, H. O. Medium pressure steam concentration of waste sulphite liquor. Pulp Paper Mag. Can. 51, no. 3: 139-46 (Convention, 1950).

A new method of concentrating sulfite waste liquor by the use of medium pressure steam is described. This paper is presented as a progress report of the tests on a pilot plant with a capacity for evaporating 24,000 pounds of water per day. The method and apparatus are described, as well as the difficulties encountered with scaling of the heater tubes, and operational and mechanical troubles. The successes obtained to date are outlined. Operational washing cycles using acid condensate show good promise for descaling the heater tubes, and it is anticipated that the pilot plant will be rearranged to test this procedure. In conclusion, data on the economics of a plant-size installation are given and compare favorably with the figures for other methods of evaporation and concentration. 16 figures. E.S.

FERMENTATION PROCESS

ENEBO, LENNART. On the formation of reducing sugars in thermophilic cellulose fermentation. Acta Chem. Scand. 3, no. 8: 975-81 (1949). [In English]

By using a pure culture of cellulose-decomposing bacteria, both cellobiose and glucose were produced, and small amounts of higher polysaccharides were probably also obtained. Experiments with the fermentation of cellobiose, arabinose, xylose, glucose, fructose, maltose, and mannose showed that of these, cellobiose was almost completely fermented, whereas the fermentation of the other sugars was far less. Sucrose was not fermented. The pentoses were fermented more effectively than glucose, fructose, or mannose. 5 tables and 10 references. L.E.W.

FIBER—DIMENSIONS

BISSET, I. J. W., DADSWELL, H. E., and AMOS, G. L. Changes in fibre-length within one growth ring of certain angiosperms. Nature 165, no. 4192: 348-9 (March 4, 1950).

In *Eucalyptus gigantea* the late-wood (summerwood) fibers were 60% longer than early-wood (springwood) fibers of the same growth ring and the fiber-length variation followed a characteristic pattern through the various growth rings. This variation has been directly correlated with growth rate. Similar variations were observed in other eucalypts which also have the distinct growth rings indicative of temperate conditions; but in those eucalypts without such definite growth rings, there were no significant fiber length variations in the wood laid down over several years. In those species with definite growth rings from other genera, the late-wood fibers were considerably longer than the early wood fiber and, in some of the ring porous woods, they were two to three times as long. Generally the pattern was similar to that of *E. gigantea,* a gradual increase in fiber length throughout the ring; but in certain species the increase was rapid, and a more or less constant value was quickly reached. There must be a close relationship between cell dimensions and growing conditions, because growth in such species reaches a maximum in the early part of the growing season. Tropical woods with indistinct growth rings show little variation in fiber length during several years' growth. Examination of a number of gymnosperms showed that in all cases where compression wood is not present, the late-wood tracheids are slightly longer (up to 11%) than the early-wood tracheids. It seems that variation within the growth ring follows the same general trend in all woods in which distinct rings are present, although the variation is much less marked in the gymnosperms. 1 table, 2 graphs, and 9 references. I.H.I.

FIBER—STRUCTURE

HESS, KURT. The morphological factors in cellulose fibers and their influence on chemical reactions. Kunstseide u. Zellwolle 27, no. 2: 37-50 (February, 1949). [In German]

A lecture is presented, illustrated with diagrams and photomicrographs, in which the morphology of cellulosic materials is reviewed, with numerous references to the previously published work of the author and his associates in this field. The influence of the configuration and ontogeny of the fiber on chemical reactivity is discussed. Three types of chemical reaction-time curves are recognized, and examples of each are presented: a rapid reaction as in nitration, an S-shaped reaction curve as in the xanthation of sodium cellulose-I, and irregular curves as in methylation. The changes induced by drastic mechanical deformation in the oscillating mill, and by subsequent recrystallization of the material, are illustrated. In general, it is established that the fibers embody two directly opposed structural principles as regards their effect on chemical activity: as a reaction-promoting principle, the extensive inner surface offered by the fibrillar structure; and as a reaction-retarding principle, the outer primary wall or skin which can influence the rate of exchange between surrounding liquids or reaction mixtures and the fiber interior. 3 tables, 20 figures, and 26 references.
M.A.H.

HODGE, A. J., and WARDROP, A. B. An electron-microscopic investigation of the cell-wall organisation of conifer tracheids. Nature 165, no. 4190: 272-3 (Feb. 18, 1950).

The micellar orientation of the cellulose was established for the inner layer of the secondary wall of tracheids of Douglas fir by preparing Formvar replicas of gold-shadowed tangential longitudinal sections of the wood. From electron micrographs it is apparent that cellulose fibrils of the inner layer are inclined at approximately 80° to the longitudinal tracheid axis in the specimen used. To investigate the fibrillar structure of cellulose further, delignified sections were disintegrated in a Waring blendor and were examined directly after shadowing with uranium. Some specimens showed a uniform fibrillar orientation, whereas in others a crossed fibrillar organization was observed in which the fibrils crossed at an angle of approximately 70°. It is still uncertain to which cell-wall layer each type belongs. At high magnification the fibrils gave the impression of consisting of a series of small particles 50-100 A. in diameter, placed end to end. 2 figures and 15 references.
I.H.I.

FINISHING ROOM

TECHNICAL SECTION OF THE PAPER MAKERS' ASSOCIATION OF GREAT BRITAIN & IRELAND. *London Division.* The finishing end: a practical discussion. Proc. Tech. Sect., Paper Makers' Assoc. Gt. Brit. & Ireland 29, no. 2: 303-13 (December, 1948).

Brief articles on the following subjects were presented, followed by a general discussion: Head, W. L. Reeling, p. 304-5; Hills, H. Supercalendering, p. 306-8; Carter, W. J. Cutting and salle work, p. 309-10; general discussion, p. 311-13.
E.S.

FLAME SPECTROPHOTOMETRY

RICHTER, A. E., SCARTH, J. C., and BERNHARDT, A. A. The use and application of flame spectrophotometry in alkaline pulp mill

control. Pulp Paper Mag. Can. 51, no. 3: 153-5, 158, 227 (Convention, 1950).

Following a brief mention of the methods commonly used for the determination of sodium and soda losses in alkaline pulping (which are either too time consuming or not sufficiently accurate), the application of the Beckman flame spectrophotometer to the analysis of sodium and calcium losses in the sulfate mill of the Kalamazoo Vegetable Parchment Co., Ltd., at Espanola, Ont., is described. The analysis of a material by a flame spectrophotometric method depends upon the atomic excitation of the substance by means of a flame. Each element emits radiant energy at characteristic wavelengths. By means of suitable filters, or prisms and slits, light of a given wavelength (depending on the element under analysis) is selected. The intensity of this monochromatic energy is translated into terms of the concentration of the element in the sample under analysis by suitable optical or photoelectric means. The preparation of the samples for analysis and a routine determination are outlined. Important points in favor of this analytical procedure are accuracy, speed of determination, and simplicity; its advantages for improved mill control are discussed. 3 tables and 1 figure. E.S.

FOAM

ROSS, SYDNEY. Inhibition of foaming. II. A mechanism for the rupture of liquid films by antifoaming agents. J. Phys. Colloid Chem. 54, no. 3: 429-36 (March, 1950); *cf.* B.I.P.C. 14: 355.

A combination of the concepts of the entering coefficient of Robinson and Woods (*cf.* B.I.P.C. 19: 237-8) and the spreading coefficients of Harkins (*cf.* J. Chem. Phys. 9: 552-68 [1941]) is used to furnish a mechanical description of some observed phenomena associated with the destruction of liquids by antifoaming agents. 1 table and 14 references. E.S.

FOLDING BOXES

ANON. Plastic ice-cream cups. Modern Packaging 23, no. 7: 81 (March, 1950).

Molded heart-shaped plastic cups for individual servings of ice cream were recently introduced by the Quality Chekd Ice Cream Assn., Chicago, in connection with Valentine's Day. A one-piece, folding window carton holds four of the transparent cups on a die-cut inner platform; a continuous sheet of 120-gage cellulose acetate lines the inside of the lid, covering the heart-shaped openings. The cartons, having collapsible corners, are shipped flat to the ice cream producer and set up by hand. 1 illustration. J.A.B.

GORDON CARTONS, INC., *Baltimore.* New carton construction aids tomato handling. Packaging Parade 18, no. 206: 86 (March, 1950); Shears 68, no. 687; 64 (March, 1950).

Announcement is made of a new bottom-seal window carton for tomatoes, which is designed in such a way that the retailer can open the box and remove spoiled tomatoes without destroying the package. The perforated flap, after opening, is tucked inside to reclose the box. Automatic sealing at the factory is accomplished by a special machine at speeds of 30-35 boxes per minute. 3 illustrations. J.A.B.

FORESTS AND FORESTRY

MALSBERGER, H. J. Forest conservation report of Forester-Gen-

eral Manager. Southern Pulp Paper Manuf. 13, no. 3: 29, 31-2, 34 (March, 1950).

The author discusses the activities of the Southern Pulpwood Conservation Association during 1949 under the headings: public understanding, forest fires and planting, landowner attitude, cutting practices, private forest loans, and the need for the services of a forester. The Association was created by the southern pulp and paper industry in 1939 for improving forestry practices in that region; for almost half of the ensuing ten-year period the conservation program was suppressed by the war and its disturbing influences, which continued in the postwar period. Although not all gains were lost during the dormant period, the program has only recently started to regain its effectiveness. The accomplishments to date are reassuring, although further concentrated efforts by all association members are needed to make the work effective in all sections of the South. E.S.

YOUNG, VERTREES. Gaylord pine plantations and forestry policy. Southern Pulp Paper Manuf. 13, no. 3: 42 (March, 1950); *cf.* B.I.P.C. 20: 243.

Brief reference is made to plantations, species, results with various thinning experiments, cost of growing, and timber policy. Tabulated data are included. E.S.

FUNGI

RENNERFELT, ERIK. The effect of some antibiotic substances on the germination of the conidia of *Polyporus annosus* Fr. Acta Chem. Scand. 3, no. 10B: 1343-9 (1949). [In English]

Root rot in spruce (*Picea abies* Karst.) and in certain instances an attack on the cambium and outer sapwood of pine is caused by *Polyporus annosus*. The inhibiting effects of an entire series of fungicides was studied, with a view toward volume which inhibited or controlled the growth of the germination of the conidia of the rot. These ranged from mercuric chloride and phenol, through an entire series of antibiotics, many of which were not very potent. Mercuric chloride, however, prevented germination at 20 p.p.m. Germination was also prevented by gladiolic acid (at pH 3.6, 5 p.p.m.), glutinosin (at pH 3.6, 5 p.p.m) mycophenolic acid (at pH 3.6, 1 p.p.m.), puberulic acid (at pH 3.6, 10 p.p.m.), the "red pigment" produced by *Pencillium nigricans*-Janczewskii (at pH 3.6 or 5, 5 p.p.m.), and viridin (at pH 3.6, 5 p.p.m., and at pH 5, 0.2 p.p.m.). Pinosylvin(or its methyl ether) prevented germination with 50 p.p.m. In most instances, the effect was greater at pH 3.6 than at pH 5. Detailed tabulations are given. 5 tables and 23 references. L.E.W.

GUMS AND RESINS

GRÅLEN, NILS, and KÄRRHOLM, MARIANNE. The physicochemical properties of solutions of gum tragacanth. J. Colloid Sci. 5, no. 1: 21-36 (February, 1950); *cf.* B.I.P.C. 19: 163.

The results of experimentation on three different solutions of tragacanth, nondegraded, degraded by boiling for 30 minutes, and degraded by boiling for 330 minutes, yielded the following respective values: sedimentation constants at zero concentration (s_0, Svedberg ultracentrifuge), 8.0, 5.7, and 4.6 *S;* diffusion constants at zero concentration D_0, 0.59×10^{-7}, 0.64×10^{-7}, and 0.82×10^{-7} sq.cm./sec.; molecular weight from s_0 and D_0, 840,000, 550,000, and 350,000; widening value at zero concentration, $(dB/dx)_0$, 0.70, 0.77, and 0.70; intrinsic viscosity, 12.3, 12.0, and 6.4; frictional ratio, f/f_0,

6.2, 6.5, and 5.9; length of molecule, 4500, 4200, and 3200 A.; width of molecule, 19.0, 15.9, and 14.5 A.; and partial specific volume, 0.607 for nondegraded tragacanth. These figures were calculated on the assumption that the molecules are nonsolvated. The properties indicate that the molecules of gum tragacanth consist of long chains with small adjacent side chains. Its viscosity is extremely high, but its solutions always behave as liquids, not as solid gels, even at a high concentration. 5 tables, 9 graphs, and 18 references. J.A.B.

ILLUMINATION

SCHWEISHEIMER, W. Good lighting increases efficiency. Paper Ind. 31, no. 12: 1430 (March, 1950).

The advantages of good illumination are better workmanship, increased production, decreased costs, greater ease of seeing, less eyestrain, improved morale, better housekeeping, and greater safety. The recommended minimum standard for levels of illumination in a paper machine room is 20 footcandles. Combined illumination should eliminate direct and reflected glare as well as objectionable shadows. Possible improvements in light utilization by the correct paint on walls, ceilings, and floors are mentioned. E.S.

INSTRUMENTATION

GORDON, H. A. P. Bleach plant instrumentation at The E. B. Eddy Co. Pulp Paper Mag. Can. 51, no. 3: 127-33 (Convention, 1950).

The instrument controls of the recently completed continuous bleaching system of The E. B. Eddy Co. at Hull, Que., are described in detail, from the time of the unloading of the caustic (received at the mill in tank cars at 50% concentration) through a four-stage process (continuous chlorination, continuous caustic, continuous hypochlorite, and batch hypochlorite) to the dumping of the bleached stock into the dump chests. The system is designed for a capacity of 120 tons of bleached sulfite pulp per day; the equipment is installed on five different floor levels, but the entire process is controlled from the top or washer floor. 8 figures. E.S.

MURPHY, E. A. Engineered instrumentation for modern multistage bleaching systems. Paper Trade J. 130, no. 13: 19-22 (March 30, 1950); *cf.* B.I.P.C. 20: 88.

The article is almost identical with the previous reference. E.S.

INTERIOR PACKING

ANON. Safety for safety glass. Packaging Parade 18, no. 206: 74-5 (March, 1950).

The success of the improved method of shipping safety glass adopted by Libbey-Owens-Ford Glass Co., Toledo, is attributed to the use of large-size Sus-Rap, a product of Vanant Products, Inc., Milwaukee (*cf.* B.I.P.C. 20: 402). Precut Sus-Rap strips are placed on each corner of six-light stacks, then side pieces are added to give additional support. The protected glass is easily packed in corrugated boxes which pass through a horizontal stapling machine at the rate of 1000 units per day, at full production. The same general method is used for single-light shipments. 5 illustrations. J.A.B.

JUTE

SEN, M. K., and HERMANS, P. H. The structure of the jute fibre.

Part II. The role of the lignin-hemicellulose complex and other noncellulosic constituents. Rec. trav. chim. 68, no. 12: 1079-1105 (December, 1949). [In English] *cf.* B.I.P.C. 18: 754-5.

The authors attempt to furnish data which will contribute to the problem of the structure of the jute fiber. The attack used included swelling and staining reactions optical studies on jute cross sections in various stages of chemical purification, and quantitative x-ray measurements. After examining the original jute, the authors caused partial delignification through the use of chlorine dioxide solutions followed by extraction with aqueous sodium bisulfite. Holocellulose and α-cellulose were prepared by Sarkar's methods (*cf.* B.I.P.C. 18: 595-6), and Cross and Bevan jute cellulose was also made by the usual procedure and examined. The following general conclusions were reached: lignin in jute is not uniformly bound. The relatively small fraction which is most difficult to remove is in the outer layers of the fiber, beyond the secondary layer (as shown by the staining reactions). This lignin serves as a barrier to the swelling of the fiber, and this barrier is probably associated with the middle lamella. Swelling is "normal" when the middle lamella is damaged on mechanical separation of the cells. Staining reactions with Victoria blue seem to indicate the presence of a hemicellulose-lignin complex of acid nature. Optical studies indicate that the birefringence (observed in cross sections) of the primary wall persists through all the purifications. X-ray studies show that the crystalline cellulose in jute remains the same in quantity throughout the purification. This has the same relation to the total α-cellulose as that found in ramie, cotton, and flax. The fiber diagrams of raw jute, partly delignified jute, holocellulose, and Cross and Bevan cellulose exhibit two new equatorial lines corresponding to a spacing of about 14 A. and 8.5-9.5 A. The former is very sharp and its intensity increases with increased purification. However the lines disappear in α-cellulose prepared from holocellulose or Cross and Bevan cellulose. The x-ray data are discussed at length. 11 tables, 10 figures, and 8 references. L.E.W.

KRAFT PULP AND PAPER

EVERY, DERNELL. Review of 1949 in the unbleached kraft paper industry. Paper Trade J. 130, no. 8: 66 (Feb. 23, 1950); Paper Mill News 73, no. 8: 104 (Feb. 25, 1950); Southern Pulp Paper Manuf. 13, no. 3: 54 (March, 1950); Paper Ind. 31, no. 12: 1469 (March, 1950); Am. Paper Merchant 47, no. 3: 24 (March, 1950); Am. Paper Converter 24, no. 3: 21 (March, 1950); Paper & Twine J. 24, no. 1: 13-15 (March, 1950); Paper Trade J. 130, no. 14: 37 (April 6, 1950); *cf.* B.I.P.C. 19: 551-2.

In 1949 the kraft paper industry enjoyed the third largest year of business in its history; the production of approximately 1,900,000 tons represents a 12% decline from the record established in 1948. A good year for the industry is foreseen for 1950, considerably better than 1949 and probably equal to the record year of 1948. E.S.

LAWS AND LEGISLATION

PARKER, LEO T. Liabilities—employer or employe. Fibre Containers 35, no. 3: 90-3 (March, 1950).

A brief review is given of some of the unusual and outstanding higher-court decisions involving employers and employees. In many instances, the higher courts approve unusually large damage allowances awarded by a

jury, particularly when the evidence indicates that a serious injury was sustained by an innocent person through positive neglect of an employee. Contrary to common belief, all employees, as well as all officials, foremen, and department managers, are personally liable for damages to persons or property resulting from their own negligence. Modern courts consistently hold that all employees are obligated to serve their employers faithfully and not divulge trade secrets to a competing company; an employee who violates this rule must pay back all salary and compensations received from his employer. The various types of cases are illustrated by specific examples. J.A.B.

WHYTE, MALCOLM K. Legal events of the past year of interest to the paper industry. Paper Trade J. 130, no. 8: 123 (Feb. 23, 1950). 1950).

Fourteen examples of judicial legislation in the field of antitrust prohibitions are given. E.S.

LIGNIN

ENKVIST, TERJE, and HÄGGLUND, ERIK. The relationship between sulfidation, methylation, and sulfonation of lignin. Svensk Papperstidn. 53, no. 4: 85-93 (Feb. 28, 1950). [In German; English and Swedish summaries]

Methylation of protolignin in sprucewood prevents the dissolution of the lignin by bisulfite. It has now been found that methylation of sprucewood also inhibits the formation of thiolignin soluble in alcohol. Because sprucewood pretreated with sodium hydrosulfide can be pulped only with difficulty, it seems that the same reactive group in lignin is responsible for the two reactions. This problem has been studied further. Methylated sprucewood (37.5% methoxyl content) was heated for six hours with sodium hydrosulfide at 160° C., giving 96.8% recovered wood with 35.8% methoxyl and 3.9% sulfur. With sodium sulfide in place of sodium hydrosulfide, 87.4% of the methylated wood with only 0.2% sulfur is recovered, indicating the retarding effect of the methylation. Methanol spruce lignin, when treated with hydrogen sulfide at 100° and a pH of 7, takes up 2.7% sulfur, whereas the wood recovered from the methanol-hydrochloric acid extraction takes up only one fifth of the sulfur absorbed by untreated sprucewood. Cuoxam, hydrochloric acid, phenol lignin, native spruce lignin, and alkali lignin, when heated with hydrogen sulfide at 100° and pH 7, bind 4-6% sulfur. When lignosulfonic acids and sulfonated sprucewood are heated with hydrogen sulfide at 100°, 1-2% additional sulfur is taken up without any effect on the sulfonic acid groups. With sodium hydrosulfide at 160°, lignosulfonic acid loses its sulfonic acid groups, giving sulfided lignins (with about 12% sulfur) which are very similar to those obtained from sprucewood with hydrogen sulfide at pH 7 and 100°. Wood sulfonated at pH 5.5 and then treated with hydrogen sulfide at pH 7 and 100° still absorbs a small amount of sulfur but considerably less than the untreated wood. Sprucewood previously sulfided at pH 7 and 100° (having a sulfur content of about 1.5%), when subjected to a cook with strong bisulfite, is sulfonated with an increase in sulfur content of 3.5%, but the solid lignosulfonic acid so formed is not rendered soluble. However, when the sulfided wood is cooked first with sodium bisulfite at pH 5.5 and then with a strong bisulfite liquor, a normal pulp with a relatively low lignin content is obtained. From these results it seems probable that, in the reaction of lignin with hydrogen sulfide, bisulfite, or alcohol in the presence of hydrochloric acid, the same groups participate. 9 tables and 28 references. F.E.B.

ERDTMAN, HOLGER, and LEOPOLD, BENGT. Aromatic keto- and

hydroxy-polyethers as lignin models. II. Acta Chem. Scand. 3, no. 10B: 1358-74 (1949). [In English] *cf.* B.I.P.C. 19: 400.

For studying the sulfonation of lignin as lignin models, poly-*p*-(acetoguaiacyl)-*p*-acetoguaiacone methyl ethers with three to five chain members and their corresponding α-hydroxy compounds (I) have been synthesized. In all cases the hydroxyl groups in (I) are replaced by sulfonyl groups, yielding amorphous compounds which give no crystalline derivatives; the rate of sulfonation, however, decreases with increasing chain length. When the sulfonation is carried out in the presence of resorcinol, the sulfonation reaction is greatly retarded, indicating that the group A in lignin (*cf.* B.I.P.C. 19: 479), which under acid conditions readily reacts with phenols and thus prevents the delignification, is of a benzyl alcohol type, i.e., the hydroxyl group is in the α-carbon atom of the side chain with respect to the benzene ring. At a higher pH (3.5), the rate of sulfonation in the presence of resorcinol increases as compared with the sulfonation at a lower pH (1.1). The sulfonation of dihydro-3,4-dimethoxyphenacyl coerulignol ether is considerably slower than that of the other model substances, probably because of the hydrophobic nature of the coerulignol portion of the ether. 1 table, 4 figures, and 16 references. F.E.B.

LIESER, TH., and SCHAACK, WILHELM. Lignin. II. Chem. Ber. 83, no. 1: 72-7 (February, 1950). [In German] *cf.* B.I.P.C. 8: 146.

In an attempt to isolate lignin in as unchanged a state as possible, and to protect the hydroxyl groups by esterification from further condensation, sprucewood was nitrated at −10 to 20° C. for two hours with a mixture of sulfuric and nitric acid (2.5: 1), containing 5-50% water. With nitration mixtures containing 8-14% water, a nitro wood (I) is obtained in yields of 150% (based on the wood) with 11.2-12.2% total and 11-11.9% ester nitrogen. Nitration with nitric acid alone gives a (I) in 95% yield with 1.55-4% total nitrogen. Boiling (I) with alkali gives a small amount of ammonia. Addition of urea to the nitration mixture has no effect on the nitration, indicating that no appreciable oxidation takes place. On extraction of the thoroughly washed and dried (I) with methanol, a methanol nitrolignin (II) is dissolved in an amount depending upon the nitration temperature (16% when nitrated at −9°, 32% when nitrated at 30° C.). Evaporation of the methanol leaves a light brown (II), which is soluble in various organic solvents. (II) contains about 10% total and about 6% ester nitrogen. Nitration of cuoxam and hydrochloric acid spruce lignins gives results similar to those obtained from wood. Technical lignins give nitrolignins (III) with a lower nitrogen content (3.3-7.9%). (III) are darker in color than (II) but have the same solubility as (II). 8 tables and 8 footnotes. F.E.B.

PELCZAR, MICHAEL J., JR., GOTTLIEB, SIDNEY, and DAY, WILLIAM C. Growth of *Polyporus versicolor* in a medium with lignin as the sole carbon source. Arch. Biochem. 25, no. 2: 449-51 (February, 1950).

It has been found that *Polyporus versicolor* is capable of growth in chemically defined media containing isolated native lignin and requires no adaptation period; good growth occurs in 7-17 days. A rapid growth response is obtained with lignin as the sole source of carbon in a synthetic medium. Experimental data are given, and the results are recorded in tabular form. 1 table and 5 references. J.A.B.

R. L. D. Lignin lingers (in Reports on the chemical world today). Ind. Eng. Chem. 42, no. 3: 10A, 12A, 16A [Advertisement section] (March, 1950).

The problems connected with the profitable utilization of lignin from sulfite waste liquor, accomplishments to date, and recent literature on the subject are reviewed briefly. E.S.

LIME AND LIMESTONE

TOCK, W. H. Lime processing equipment. Paper Mill News 73, no. 9: 12, 14-16 (March 4, 1950); Pulp Paper Mag. Can. 51, no. 4: 100-3 (March, 1950).

The author reviews the development and improvements in rotary lime kilns for reburning the lime sludge in sulfate mills, including two-support kilns, heat-recuperating chain systems, and multiple-support kilns. The mechanical components of the kiln, riding rings, carrying mechanisms, and drives are discussed, and directions for a smooth and properly controlled operation are given, with special reference to the prevention of ring formation in any of the three zones of the kiln. 3 illustrations. E.S.

MACHINERY

TWEEDIE, J. Some recent developments in paper manufacture in U.S.A. Proc. Tech. Sect., Paper Makers' Assoc. Gt. Brit. & Ireland 29, no. 2: 531-79 (December, 1948).

The author discusses recent American developments for defibering pulp sheets and waste paper, new beating systems, and new machine developments, including a discussion of three lightweight-tissue machines for grades ranging from cellulose wadding to creped toweling, and two high-speed kraft machines. 7 tables, 52 figures, and 24 references. E.S.

MACHINERY—BARK PRESS

CHAMBERS, R. J., and LOGAN, K. C. The Stacom continuous roller press. Pulp Paper Mag. Can. 51, no. 3: 163-7, 173 (Convention, 1950); Paper Ind. 31, no. 11: 1300-1 (February, 1950). [Abridgment]

An illustrated description is given of the Stacom press or "Stacomizer," which is a novel design in which a free-floating ring runs between two rolls, and the material being pressed passes between the inner roll and the inner surface of the ring. Trial runs were made at various pressures and bark was pressed to moistures of between 50 and 55%. The press also broke up the bark into fine pieces suitable for conveying or burning, so that no hog would be required to prepare the product for conveying by screws, belts, blowers, etc. Feed rates varied with the slipperiness of the bark and averaged about 70 tons of ovendry material per 24 hours. Rates as high as 120 tons were secured, but with very slippery bark the feed rate dropped to about 40 to 50 tons. The press was first operated with smooth surfaces on both ring and rolls. However, throughput rates were considered too low, so the work roll and floating ring were provided with meshing circumferential grooves in contact with rows of nonmeshing angular transverse grooves. This resulted in improved throughputs, but also increased the moisture content of the product. Variations in the configurations of the grooves is expected to improve the moisture extraction without decreasing the throughput. In conclusion, reference is made to many other potential applications of the press in the pulp and paper industry, with emphasis on the absence of cutting action when fibrous materials are treated. Preliminary investigations were made to explore the possibilities in pulping applications, including the passage of steamed chips prior to sulfite cooking, the treatment of two batches of neutral sulfite semichemical pulp, and of commercial chips

soaked for 24 hours in water. All chips passed through the press without any difficulties and at high production rates. Although only limited time was available, the results indicate that there may be wide fields of application for the press in the industry. 5 figures and 11 tables. E.S.

MACHINERY—BEATERS

WEIR, HARRY N. Multi-roll Victory beater for wood pulp stock. Paper Mill News 73, no. 12: 58 (March 25, 1950); *cf.* B.I.P.C. 20: 323.

The new multiroll beater actually represents three separate refining units connected in series. Each unit consists of a roll and bedplates, between which the pulp stock is given the desired degree of treatment according to the amount of pressure exerted by the hydraulically operated bedplates against the roll. The controlled flow of stock is discharged from one unit directly to the next in a continuous uninterrupted flow, without intermediate tubs or vats. Southern kraft paper mills are especially interested in this unit, because of its ability to refine large quantities of pulp stock (150 tons or more per day) on a continuous production basis; the first commercial installation was made in the kraft mill of the Hudson Pulp & Paper Corp., Palatka, Fla. E.S.

MACHINERY—BELTING

GAHL, E. A. V-belts for speed variation in the pulping process. Paper Mill News 73, no. 12: 51-2 (March 25, 1950).

Different applications of Vari-pitch drives to woodroom and groundwood-mill equipment are outlined. 2 tables and 3 illustrations. E.S.

MACHINERY—CODING MACHINE

ANON. Photo-electric perforator code-dates bags, cartons. Packaging Parade 18, no. 206: 40 (March, 1950).

A recent development of the American Perforator Co., Chicago, is American Model 700, a photoelectric code-dating perforator for coding heat-sealed or stapled bags. This machine requires no operators or attachments, is self-powered, and automatically perforates and counts 200 or more bags per minute, depending upon the size of the item and the speed of the conveyor. Mounted on a pedestal-type stand, the complete unit may be moved, raised, lowered, or tilted without disrupting production. 2 illustrations. J.A.B.

MACHINERY—CONVERTING MACHINERY

ANON. Corrugated box machine made for short runs. Shears 68, no. 687: 47 (March, 1950).

A machine for the production of small-run corrugated boxes with a set width of 4-18 inches, a depth up to 32 inches, and length up to 36 inches has been designed by Walter P. Jacob Industries Inc., New York, and is called the Rite Size box machine. Scored and slotted box blanks are automatically produced in one operation from large sheets of board at the rate of 600 per hour. A complete change of box dimensions can be made in one minute. 1 illustration. J.A.B.

MACHINERY—DRIVE, ELECTRIC

GOODRICH, A. S. Power requirements for paper machines: first report on an Electrical Engineering Committee project. Tappi 33, no. 3: 113-16; discussion: 116-17 (March, 1950).

With the development and application of sectional electric drives for paper machines, the power required for each section can be measured readily.

Some of this information has been published previously in Technical Association papers. From these data power constants (expressed in horsepower required per inch of wire width per 100 feet of machine speed per minute) are recommended for use in the estimation of the power requirements. These constants cannot be considered rigid because corresponding sections of similar machines on similar weights and grades of paper show a variation of 100%. Similar or larger variations on an individual section of a machine on the same grade and weight of paper have been noted. The trend in paper machine design is for larger and faster machines making a wider variety of products. Sections for the special treatment of the paper have also been added. Nip pressures of press sections are being increased. Data from modern machines installed during the past 10 years have been obtained and used to check or revise the constants. Data for cylinder and tissue machines have been included. Recommended power constants for the various sections of paper machines are listed, as well as some of the unusual or special cases that affect power requirements. 3 tables and 4 references. E.S.

MACHINERY—GRINDERS

ANDERSON, T. C. Small versus large grinders for production of newsprint groundwood. Pulp Paper Mag. Can. 51, no. 3: 159-62 (Convention, 1950).

The changes in stock quality and control were studied in three mills which had recently replaced a relatively large number of three- or four-pocket grinders with comparatively few high-production units. By chance, rather than by intention, the new units studied were all Waterous-type grinders, in two cases of the magazine type and in one case of the Great Northern type. Data are given on stone operation; grinder-pit consistency, freeness, and temperature; consistency entering the Cowan screens; freeness at mixer; the percentage of tailings; mixed stock freeness; headbox temperature; paper-machine speed; vacuums; breaks per machine-day; and paper strength. No surprising or unpredictable changes were encountered, although difficulties do exist, as in the case of any new piece of equipment. The basic principles of the operation are not changed, but rather the methods of applying these principles. With large, high-production grinders, the ratio of individual grinder production to total mill production increases, and the chance of a stock quality upset from one faulty stone rises proportionally. 3 diagrams. E.S.

MACHINERY—JORDANS

PREVOST, BRUNO E. Jordan plug pressure control system. Pulp Paper Mag. Can. 51, no. 3: 174-7, 189 (Convention, 1950); *cf.* B.I.P.C. 20: 249.

This is essentially the same article as the previous reference. 5 charts. E.S.

MACHINERY—PASTING MACHINE

ANON. Corrugated box gluing machine. Fibre Containers 35, no. 3: 73-4 (March, 1950).

The automatic-feed, high-speed corrugated-box gluing machine recently developed by the Samuel M. Langston Company, N.J., differs from the Langston-Bowee automatic folder only in that a glue applicator has been added. Feeding automatically from a hopper, the machine glues, folds, and delivers the finished box to the bundling table at the rate of 90-120 per minute; setup requires only three to five minutes. The glue box, applicator, wheel, scraper, etc., are all readily removable for cleaning, an important requirement where waterproof adhesives are used. 3 illustrations. J.A.B.

MACHINERY—PRINTING PRESS

BLAKEMORE, FRED T. Quick change, versatile press offered. Am. Paper Converter 24, no. 3: 18-19 (March, 1950).

A rotary, high-speed web printing press, introduced by Crawford, Inc., Providence, R.I., can be converted from gravure-offset printing to letterpress in 20 minutes by replacing the gravure cylinder with a "celmeter" roller and the offset roller with one which carries rubber plates. Makeready is not necessary in either type of printing, and any basic form of ink may be used. The physical and performance characteristics of this Crawford Dual Purpose Press, Model 31-600, are discussed. 1 illustration. J.A.B.

MACHINERY—REFINERS

MÜLLER-RID, WILHELM, and JEBSEN, WILHELM. The application and mode of operation of modern stock-preparation equipment. Das Papier 4, no. 3/4: 37-44 (February, 1950). [In German] *cf.* B.I.P.C. 20: 22.

A modern stock preparation plant consists of a pulper, refiner, and jordan, which operate either as a batch or continuous system and deliver the stock, properly treated for each specific use requirement, to the machine chests. The authors describe the functions of each piece of equipment, based on a recent literature survey and personal experiments and observations. The pulper (Hydrapulper, etc.) performs the most economical work by reducing wet lap, bailed, or rolled stock, broke, waste paper, etc., to a flowable condition in which it can be pumped; it is not suitable for the complete separation into individual fibers. After a certain stage is reached, its efficiency drops and continuance beyond this stage is a waste of power. Complete defibering with the lowest power consumption may be obtained in a refiner (Hydrafiner, etc.) simultaneously with an increase in strength and without a noticeable drop in freeness. Refiners may operate either in series or as one refiner connected with a cycling chest. Modern high-speed jordans (such as the Jones Composite) are considered the ideal beating equipment, which combine the strength-developing action of the refiner with the cutting and fibrillating effects of the standard jordan. Experiments with sulfite pulp yielded maximum strength values at lower beating degrees and power consumption than was possible in a standard beater used for comparison. Similar experiments with sulfate pulp are under way; however, definite conclusions cannot yet be reached. 6 figures, 2 series of transparencies illustrating the progress in defibering in pulpers and refiners, and 12 references. E.S.

POLLEYS, R. W. Downingtown enters stock preparation field. Paper Mill News 73, no. 12: 48-9, 87 (March 25, 1950); Paper Ind. 32, no. 1: 45 (April, 1950).

Reference is made to a new stock pulper, the FIBREpulper, with a lobed design, continuous pulpers, broke pulpers, and to the FIBREfiner, an improvement of the high-speed Wiener refiner, which have recently been developed by the Downingtown Manufacturing Co. 3 illustrations. E.S.

MACHINERY—SCREENS

KUHN, JOHANN. Shaker-type channel flat screens for wood chips. Zellwolle u. Kunstseide 2, no. 5/6: 93-5 (May-June, 1944). [In German]

Different constructions of shaker-type chip screens are outlined, with emphasis on straight-line operation from wood pile to digesters. The under-

ground construction of the inclined flat screens is proposed. 5 diagrams. E.S.

SELLERS, F. G., TURNER, M. W., and WHITE, D. O. Modernization of pulp screening equipment at the Manitoba Paper Company Limited. Pulp Paper Mag. Can. 51, no. 3: 147-52 (Convention, 1950).

The necessary changes for the modernization of the two-machine newsprint mill to convert it into a modern high-speed unit with a daily capacity of 400 tons at machine speeds approaching 1600 ft./min. are partially complete. The present article deals only with the major changes in screening equipment and practice made during the past few years in order to handle the above tonnages. Production has now been stepped up to about 340 tons per day from an original 280 tons in 1946. Further increases in production await certain major changes on the paper machines so that they may be safely speeded up to the required level. The revamping of the screening system was carried out in three stages, each stage being completed before the next was begun, so that production did not have to be curtailed. The new installations include Sherbrooke groundwood filters, Jonsson knotters, an Askania-type consistency regulator, and two specially designed Waterous sulfite fine screens. The details of the equipment, stock flow, and some start-up operational troubles are described. The importance of weirs in controlling operations in a modern screening system is emphasized. The advantages of the new system, in addition to increased capacity, are more uniform stock to the machines through better control of screening consistency and flow, and savings in power, labor, slime costs, and fiber and white-water losses. 7 figures. E.S.

MACHINERY—SUCTION ROLLS

SMITH, LEON E. Water removal from board machine wet end. Paper Mill News 73, no. 10: 13-18 (March 11, 1950).

The author discusses Downingtown machinery for increasing the efficiency of the wet end of cylinder board machines directly after the sheet has been formed on the last cylinder, including the plain extractor, the suction extractor, combinations of the two units, and the suction drum roll. Water removal by pressure alone in a horizontal direction, as in a conventional primary and main press section, is detrimental to a sheet, particularly when the machine speed is increased. The difficulty is eliminated by the use of a suction primary and a suction main press installation. Details of proper combinations with plain presses are given. Felt cleaners and conditioners are mentioned briefly. A suction cylinder couch for single-cylinder roofing or flooring machines is in the process of development. 16 figures, including diagrams and illustrations. E.S.

MACHINERY—SULFUR BURNERS

WALKER, FORESTIER, PATRICK, KARL, and HINTON, LLOYD. The recovery of heat from sulphur burning. Pulp Paper Mag. Can. 51, no. 3: 228-33 (Convention, 1950).

The gases obtained in the burning of sulfur contain valuable heat energy which can be recovered and put to use. Some experiences with the heat recovery equipment (a stationary, spray-type sulfur burner operated in conjunction with a waste-heat boiler) at the mill of the Restigouche Co. at Atholville, N.B., are described. Data are given on heat recovery at various sulfur-burning rates. The installation of the waste-heat boiler permits

the recovery of about 80% of the heat of combustion of sulfur. Details are also given on instrumentation, maintenance, effect on the sulfate content of the cooking liquor, and the deleterious effect of the sulfur ash on heat-transfer efficiency. 4 tables, 2 figures, and 4 references. E.S.

MACHINERY—VORTRAP

INGALLS, HAROLD E. The Vortrap—as applied to the paperboard industry. Pulp Paper Mag. Can. 51, no. 3: 200-4, 210 (Convention, 1950); *cf.* B.I.P.C. 20: 252.

An illustrated description is given of the construction, applications, and installations of the large 8- and 10-inch Vortraps, which have been developed particularly for the removal of large quantities of solids and foreign matter from all kinds of baled waste paper stocks. They may be applied to existing as well as to new stock preparation systems. 4 figures. E.S.

MARKET RESEARCH

ANON. Pre-packaged books. Modern Packaging 23, no. 7: 78-80, 170, 172 (March, 1950).

The success of packaging regular editions of popular books has been tested by the Scribner's and Doubleday companies, with as much as 300% increase in sales in some cases. Scribner's used lithographic cartons made of 18-point patent-coated boxboard, while Doubleday experimented with a cellophane (300 MST) overwrap printed with company identification; both have met with enthusiastic approval. Some of the advantages of prepackaging books are: the ease of handling, protection of the covers, and increased display and gift appeal. Two new juvenile packages developed by the Capitol Publishing Co., N.Y., are also described. 4 illustrations. J.A.B.

ANON. Report released on experimental study covering prepackaged asparagus. Packaging Parade 18, no. 206: 43 (March, 1950).

The results are given of experiments conducted through Rutgers University College of Agriculture, in co-operation with the U. S. Department of Agriculture, to test the possibilities of expanding the sales of asparagus through prepackaging. Both laboratory tests and tests run under actual commercial conditions indicated that Lumarith film, a product of the Celanese Corporation of America, was the most satisfactory material for packaging; it gave complete protection to the product for at least 72 hours at room temperature. Prepackaged asparagus outsold the bunched product in nearly every instance, even when sold at a premium price. Additional study is necessary to determine the most efficient point of prepackaging. 1 illustration. J.A.B.

MATERIALS HANDLING

MCCLELLAND, W. B. Gasoline vs. battery power for industrial trucks. Paper Ind. 31, no. 12: 1464 (March, 1950).

The author discusses the important factors which must be taken into consideration before a decision is made regarding the selection of type of power to use for industrial trucks. For shorter distances, more frequent starting, stopping, lifting, and tilting, and reliability of operation, electric trucks are preferable. The ability to climb long ramps, a smaller turning radius, and the possibility of working the trucks harder during an emergency or peak period are some of the factors in favor of gasoline-powered

trucks. Other considerations include the possibly objectionable fumes or noise of gasoline engines, the possibility of charging batteries at night at lower cost, the surface over which the truck must travel, the probable length of time the truck can be used, etc. 1 table. E.S.

MICROBIOLOGICAL TESTING

ABRAMS, EDWARD. Microbiological deterioration of cellulose during the first 72 hours of attack. Textile Research J. 20, no. 2: 71-86 (February, 1950).

A report is given of studies made on the effects of microbiological attack on textiles. A determination was made of the loss of tensile strength of cotton duck during the first 72 hours of incubation, using five cellulolytic organisms: *Thielavia* sp., *Humicola* sp., *Stemphylium* sp., *Chaetomium globosum,* and *Myrothecium verrucaria;* although there was no evidence of mycelium to the unaided eye, the strength was reduced as much as 71% in the case of *Humicola.* A study of mildewed fibers in dilute alkali, suggested by Clegg's Congo red test, showed the localized nature of attack of cellulolytic molds and the production of alkali-soluble material in these local areas. This material was examined by infrared absorption, and no significant effects were found other than the reduction in thickness of the film. In an attempt to identify the decomposition products of cellulose, a study was made of the action of cellulolytic molds on sugars and sugar derivatives, and tests were made of some of the cellulose derivatives. Although no growth was obtained with cellulose acetate or partially acetylated cellulose, even when the fibers were ball-milled, excellent growth of *Chaetomium globosum* was obtained with cellobiose octaacetate and glucose pentaacetate in shake cultures. Enzyme extracts from *Chaetomium globosum* were found incapable of the digestion of native cotton fibers. Detailed experimental data are given. 8 tables, 11 figures, and 31 references. J.A.B.

MILL CONSTRUCTION

MCCARTHY, J. H. Construction of a paper mill; some engineering aspects of the Tacoma mill of the St. Regis Paper Company. Tappi 33, no. 3: 127-9 (March, 1950).

The author describes and summarizes the paper-mill engineering and construction work recently completed at the modern kraft paper mill at Tacoma, Wash., including the mill structure and the installation of the 180-inch paper machine designed primarily for the production of multiwall bag paper at an ultimate maximum speed of 2100 ft./min. Special emphasis is placed on the beneficial results obtained through the appointment of the operating superintendent even before the project was authorized, thereby affording early and continued co-operation between the engineering and operating forces. Work was seldom done over because of lack of previous discussion with the operating heads. 3 illustrations. E.S.

MILL CONTROL

BUTTERICK, J. A. Technical control in converting operations. Paper Trade J. 130, no. 13: 24-5 (March 30, 1950).

The author discusses the purpose and functions of technical control in converting operations, with particular reference to the Camas mill of Crown Zellerbach, whose converting unit produces a wide diversity of products. The principal function of technical control is to assist the operating personnel in producing uniformly high-quality products at a reasonably low cost; it interprets consumer requirements to the plant's personnel and is

not intended as a policing unit. The activities include the establishment and revision of specifications of parent paper and finished products, the determination of operating difficulties and increased costs, the maintenance of records of conversion waste and contributing factors, the comparison with competitors' products, the inspection of cases withdrawn from storage or shipments, and the investigation of consumer complaints. E.S.

MILL MANAGEMENT

HOLBROOK, J. E. Marketing problems and opportunities for management. Paper Trade J. 130, no. 12: 33-4 (March 23, 1950).

The author discusses the importance of cost control in selling and means for achieving it. E.S.

MOORE, JAMES D. Proper selection and hiring of workers. Shears 68, no. 687: 34-6 (March, 1950).

Personnel, the most variable item in a plant, must be given careful attention in order to maintain quality control. An unreasonably high rate of turnover can mean the difference between a profitable year and one in the red, because of the cost of training employees. The author suggests some hiring guides and interviewing techniques for the personnel director or foreman, to aid him in choosing the right person for a particular job. Intelligence and ability tests, which are used by many firms, should be a guide for rejection rather than selection, since many other factors of equal importance must be taken into consideration. J.A.B.

PECK, S. A. Effective organization in paper mill operation. Paper Trade J. 130, no. 11: 30, 32-3 (March 16, 1950).

The author illustrates the importance of teamwork in paper-mill operation and discusses methods for developing the co-operative spirit. Functional and divisional forms of organization are described. 2 figures. E.S.

RAMOND, ALBERT. How much should maintenance cost? Southern Pulp Paper Manuf. 13, no. 3: 38, 40 (March, 1950); *cf.* B.I.P.C. 20: 499-500.

The author emphasizes the fact that maintenance costs cannot be standardized and that a positive knowledge of what maintenance costs should be can only be gained by a dependable measure which truly reflects the conditions and needs from day to day, month to month, and year to year. This can be accomplished only by measuring the work as it is done. This process requires field checkers who must be familiar with the work; the responsibilities of the foremen and supervisors should be maintained in full and the field checkers should act only in a supervisory capacity. The most effective procedure is a combination of work measurement with improved preventive maintenance; relocation of shops; better shop equipment, tools, and methods; and improved storeroom facilities, order procedures, planning, and scheduling. Examples are given. 1 table. E.S.

MOTION STUDIES

PATCH, C. E. Use of charts in operation studies. Paper Ind. 31, no. 12: 1425-8 (March, 1950).

By means of field charts and an elevator study the author explains his method for recording time observations. These field charts indicate not only the busy and idle periods of a vehicle, but also give the reasons for the

latter, so that corrective measures can be taken. The summarization of the field charts for the use of management is outlined. 1 table and 3 figures. E.S.

NEWSPRINT

AMERICAN NEWSPAPER PUBLISHERS ASSOCIATION. Newsprint consumption by states in 1949. Newsprint Service Bur. Bull. no. 386: 3 (March, 1950); *cf.* B.I.P.C. 19: 560.

ANPA has compiled figures giving newsprint consumption by states for the year 1949, based on reports from 1393 daily newspapers which consumed 4,741,298 tons in 1949. New York leads with 892,228 tons; New Hampshire with 1581 tons presents the lowest figure. E.S.

RATTRAY, J. E. Newsprint from the winders to the pressroom. Pulp Paper Mag. Can. 51, no. 3: 194-9 (Convention, 1950).

The author discusses the practical problems involved in the wrapping and shipping of newsprint rolls. In 1948, the Railway Claims Division of the Association of American Railroads (representing 95% of the U. S., Canadian, and Mexican mileage) paid out $1,182,005 in newsprint damage claims. The nature of this damage is approximately: 42.7% for flat or out-of-round rolls, 26.6% cut or torn, 23.2% split ends, 2.6% split wrapper, 1.7% chafing, and 3.2% miscellaneous. The handling of rail-shipped newsprint is the responsibility of the mill, the railroads, and the publishers. Practical suggestions for the prevention of this damage are given, with particular emphasis on carloading. 6 diagrams. E.S.

ZIMA, J. J. Newsprint paper in 1949. Paper Trade J. 130, no. 8: 72, 74, 76-8 (Feb. 23, 1950); Paper Ind. 31, no. 12: 1466, 1468 (March, 1950); Paper Mill News 73, no. 8: 69-70, 72, 74, 132 (Feb. 25, 1950); *cf.* B.I.P.C. 19: 560.

The North American newsprint paper output in 1949 totaled 6,076,000 tons, an increase of nearly 4% over that in 1948; of this amount 78% was produced in Canada, 15% in the United States, and slightly more than 7% in Newfoundland. A strong demand for 1950 is predicted. Statistical data are given, covering supply, shipments, exports and imports, stocks, consumption, newspaper sizes and circulation, and advertising, including newspapers, periodicals, radio, and television. 3 tables and 3 diagrams. E.S.

PAPER—COATED

ANDERSON, NILS, JR. Progress in coating adhesives. Paper Trade J. 130, no. 8: 90, 92 (Feb. 23, 1950); *cf.* B.I.P.C. 19: 536.

Statistics in general show a steady growth in the consumption of most adhesives in the paper coating industry, except for casein. The future of casein depends on the government support of the price of skim-milk powder. The protein adhesives play an important part in brush-coating operations. Casein and soya protein are used interchangeably for many applications, depending primarily on the price of casein; the latter, however, possesses many characteristics which cannot be duplicated by nonprotein adhesives. Improvements in soya protein may make further replacements possible. The author discusses the trends in the use of cornstarch, proteins, and synthetic resin coatings. E.S.

PAPER—PACKING

ANON. The handling of paper. Papetier 3, no. 12: 31-3 (De-

cember, 1949); 4, no. 1: 27-9; no. 2: 25-7 (January, February, 1950; Allg. Papier-Rundschau no. 2: 52-3 (Jan. 30, 1950). [In French; abridgment in German]

Directions are given for the correct wrapping and packing of paper in bales, boxes, packages, rolls, and reams; unwrapping and storing; moving by truck or carrying by hand; cutting; selecting machine or cross-machine direction; and counteracting the influence of humidity. Sixty cartoon diagrams help to emphasize the suggestions. E.S.

PAPER AND PULP INDUSTRY

ATCHISON, JOSEPH E. The Marshall plan and the European pulp and paper industry. Tappi 33, no. 3: 14A, 16A, 18A, 20A, 22A (March, 1950); Paper Trade J. 130, no. 8: 114-17 (Feb. 23, 1950).

The objectives, present accomplishments, and future trends of the Marshall plan, as it refers to the Pulp and Paper Section, Industry Division, of the Economic Cooperation Administration, are reviewed. E.S.

CANFIELD, ROBERT E. Groundwood papers in 1949. Paper Trade J. 130, no. 8: 68 (Feb. 23, 1950).

Groundwood production and shipments in 1949 were off 13% from 1948 and the average sales values about 15%; some of the tonnage loss was actually a shift from uncoated to coated groundwood paper (book paper) which reflects as a reduction in the total groundwood paper statistics. The 1949 production totaled more than any year in history, with the exception of the three postwar boom years. The trends in groundwood paralleled closely the happenings in all industry; excess inventories built up in 1948 were being liquidated, until buying toward the end of the year was resumed at a pace which had little or nothing to do with consumption. The groundwood paper industry will probably follow the same pattern in 1950 as the rest of the white paper industry; it may be expected to have a good, but not a spectacular year. E.S.

CLAUSON, KARL A. A review of the paper grade, market pulps. Paper Trade J. 130, no. 8: 58-61 (Feb. 23, 1950); Paper Mill News 73, no. 8: 115-17 (Feb. 25, 1950); *cf.* B.I.P.C. 19: 566.

The author discusses briefly the inventory adjustments in the wood-pulp industry during 1949 and analyzes the supply picture for 1950, supplemented by a series of charts which illustrate the general trends in bleached and unbleached sulfite and sulfate market pulps during the last 13 years. These charts indicate clearly the dependency of the nonintegrated mills in the United States on an adequate world supply of market pulp. The economic health of these mills which have weathered the sharp fluctuation during 1949 gives assurance to the market-pulp suppliers in Canada and Scandinavia that they are a vigorous and essential part of the American paper industry. 5 diagrams. E.S.

DOBROW, MORRIS C. Paper industry returns to record production following inventory liquidation. Paper Trade J. 130, no. 8: 53-6 (Feb. 23, 1950); *cf.* B.I.P.C. 19: 563-4.

Total production in 1949 was approximately 20,300,000 tons, 7% below the record of 1948; because of inventory liquidation, actual consumption was greater than production. The final stages of the postwar readjustments in the pulp and paper industry during 1949 are discussed, including postwar wood-pulp markets and the effects of devaluation in soft-currency countries.

The prospects for 1950 would indicate that the minimum consumption requirements of domestically produced paper will be about 21,000,000 tons; they might even be as high as 22,000,000 tons if the rate of business for January continues throughout the year. A new accumulation of inventories may be in the making; moderate increases are necessary to support the increased volume of sales on all levels of distribution. There is little likelihood that the excessive accumulation of 1948 will be repeated. A chart depicting capacity and annual production of paper machines in the United States from 1917 to 1949 is included. 1 graph and 3 tables. E.S.

DONALDSON, JAMES. Which way Scandinavia? Paper Trade J. 130, no. 8: 81-2 (Feb. 23, 1950).

The author discusses the buyer and seller co-operation needed between the United States and Scandinavia to restore a steady flow of a reasonable percentage of Scandinavian production to the United States market (see also: Scandinavia intends to stay on the road leading west—to supply regularly the United States market. Paper Trade J. 130, no. 9: 14, 16 [March 2, 1950]). E.S.

ELTON, JOHN A. "Paper exports." Paper Mill News 73, no. 8: 80, 124 (Feb. 25, 1950).

The author discusses the desirability and possibilities of American exports of pulp and paper products, as well as the necessary steps which have to be taken for developing foreign markets. Export must be treated as a seriously planned program and not as a temporary expedient. The Export Committee of the American Paper and Pulp Association is not urging its members to start an export business; rather it is trying to make the fullest possible information available to interested members and to assist companies engaged in foreign trade. A growing potential market for American pulp and paper products exists abroad which can be gradually developed into a stabilizing factor in the industry's distribution system. E.S.

EVEREST, D. C. Progress in paper, 1900-1950. Paper Trade J. 130, no. 8: 65-6 (Feb. 23, 1950).

The author discusses the progress in the industry during the first half of this century, with special emphasis on good labor relations, the foundation of TAPPI in 1915 and the Superintendents' Association in 1919, the utilization of raw materials, and the complete change in the financing of companies. Comparing the years 1900 and 1949, the population increased from 75 to 150 million during this period, the annual consumption of paper and board from 2.2 to 26 million tons, and the per capita consumption from 58 to 331.1 pounds annually. E.S.

FOWLER, R. M. The Canadian pulp & paper industry, 1949-1950. Pulp Paper Mag. Can. 51, no. 3: 102-6 (Convention, 1950); Paper Trade J. 130, no. 5: 12-16 (Feb. 2, 1950); Paper Mill News 73, no. 6: 10-11 (Feb. 11, 1950); *cf.* B.I.P.C. 19: 565.

In his fifth annual report, the President of the Canadian Pulp and Paper Association discusses the significant trends of the past year, including currency devaluations, relationships, and dislocations; loss of newsprint exports to overseas markets and greater concentration on the U. S. market; the deficit in Canada's trading relations with the United States; the "absurd" talk of "artificial scarcity and shortage of supply of newsprint" in the United States (the nation had a total supply of over 5.5 million tons in 1949); and the prospects and inherent dangers of the (mainly psychological) great uncertainty of the future. E.S.

HILL, ALLAN C. Outlook for Canada's pulp and paper industry. Paper Trade J. 130, no. 8: 85-6 (Feb. 23, 1950); *cf.* B.I.P.C. 20: 412, 503.

The author reviews the conditions in the Canadian pulp and paper industry during 1949, with particular reference to newsprint, world pulp trade, other pulp and paper products, and the results of the dollar shortage and devaluation. In summary, the outlook appears to be good for the immediate future. E.S.

RITCHIE, JAMES L. Recent trends in wood pulp. Paper Trade J. 130, no. 8: 62, 64 (Feb. 23, 1950); Paper Mill News 73, no. 8: 62, 64 (Feb. 25, 1950); *cf.* B.I.P.C. 19: 881.

The U. S. wood-pulp production in 1949 totaled 12,153,000 tons, 6% less than in 1948; of the amount produced domestically, 89% was for own use (5% less than in 1948) and 11% for the market (12% less than in 1948). U. S. imports totaled 1,763,000 tons or 19% less than in 1948. Imports of market pulp amounted to 1,299,000 tons or 74% of the total imports (65% from Canada and 35% from Europe); bleached chemical pulps constituted 48%, unbleached chemical pulps 42%, and groundwood 10%, of which Canada supplied 74, 51, and 86%, respectively. The balance came from Europe. The calendar year 1949 was a year of wide cyclical movements in the wood-pulp industry. The fluctuations in imports and exports, new supply, and consumption and inventories are discussed. The outlook for 1950 is favorable. E.S.

STEVENSON, LOUIS T. The consumption trend in paper and board. Paper Trade J. 130, no. 8: 71-2 (Feb. 23, 1950); *cf.* B.I.P.C. 19: 566.

Reference is made to the saw-tooth movement of the long-term upward trend of the per capita consumption of paper and board which was discussed in the previous article. The 1948 apparent per capita consumption of 356.2 pounds appears to be on the top point of one of these saw teeth, because the 1949 apparent consumption of 331.1 pounds is down by about 25 pounds below the 1948 high. The drop in 1949 grew out of the accumulation of inventories which occurred in 1948. These inventory movements are not discernible in the apparent per capita consumption figure; the difference between 1948 and 1949 apparent per capita consumption included inventory building in 1948 which was not included in the 1949 figure. These movements are a characteristic of the apparent per capita consumption series and tend to cancel out in the long-term trend which may be used as a basis for judging the general drift. If the trend line is projected to 1960, a maximum of 423.4, a mean of 398.3, and a minimum of 373.2 pounds are obtained; the actual experience in 1960 should be within this range. 1 table and 1 graph. E.S.

STEVENSON, LOUIS T. The paper industry in 1949. Paper Trade J. 130, no. 8: 57-8 (Feb. 23, 1950); Paper Mill News 73, no. 16: 60, 101 (April 22, 1950).

During 1949 the paper industry experienced a short, sharp, but nevertheless complete business cycle. Its essential features were a sharp drop in production to the bottom of the cycle in July and an equally sharp recovery in the third quarter. In a series of charts the effects of this cycle on the earnings of labor and stockholders are illustrated; they show the important relation of the production ratio to over-all industry profits. 10 charts. E.S.

VINCENT, REX. Market pulp activity—1949. Paper Trade J. 130, no. 8: 82, 84 (Feb. 23, 1950).

The first seven months of 1949 were characterized by a listless condition of the market; the balance of the year was memorable for one of the swiftest reversions on record. A sharp shift to bleached grades, particularly sulfate, took place during the last four years. The increase in bleached sulfite was 9%, whereas the increase in bleached sulfate amounted to 180%. A brief review of the price movement during 1949 is presented. Devaluation in the Scandinavian countries came at about the end of a steady price decline, and there has been no general lowering of prices since it occurred, a fact which pulp buyers have accepted. The year 1949 broke no records as far as the production and consumption of market pulp is concerned, but it was a highly active and most interesting year because of the swift changes in market conditions. E.S.

WILLIAMSON, GEORGE E. Fine paper industry of 1950 as viewed by a manufacturer. Paper Trade J. 130, no. 13: 25-6, 38, 40 (March 30, 1950).

The author refers briefly to conditions in the fine paper industry in 1949 from the producer's standpoint; the total fine paper production was 10% less than in 1948, but 43% higher than in 1939. The actual consumption was undoubtedly higher than production because of a reduction in inventories. He emphasizes the need for selling by manufacturers and distributors alike, as well as the adherence to the fundamentals of good buyer and seller relations. In conclusion, reference is made to a sales and market analysis conducted by the Strathmore Paper Co. during 1949, covering potential markets, performance of distributors, and comparison of sales records, and to the benefits which may be derived from such an analysis by the mill and the distributors. In general there is too much "competitive selling" and too little "creative selling" for the good of the industry. E.S.

WINTGENS, H. G. Remarks at annual meeting—February 22. Paper Trade J. 130, no. 8: 130, 132 (Feb. 23, 1950); Paper Mill News 73, no. 8: 76, 104 (Feb. 25, 1950).

The production of tissue grades on which the Tissue Association collects statistics amounted to an all-time high of 1,144,714 tons in 1949. Whereas over-all tissue production was only slightly ahead of 1948, sanitary tissues showed gains from 2.6 to 20.6%. The outlook for 1950 is good, although competition will be keener and salesmanship with emphasis on selling will be needed. The services of the Tissue Association are briefly outlined, including statistical services, label registration, brand-name charts, weights and measures, legal services, public relations, and product specifications. E.S.

PAPER AND PULP MILLS

PULP & PAPER. Coosa River mill; a complete description. Pulp and Paper 24, no. 3: 46, 48, 50, 52, 54, 56, 60 (March, 1950); *cf.* B.I.P.C. 20: 505-6.

An illustrated description of the mill is given. E.S.

PAPER AS A TEXTILE MATERIAL

ANON. Kraft and cellophane make new fabric. Can. Pulp Paper Ind. 3, no. 3: 15 (March, 1950).

A new fabric introduced by Kraft Paper Products Ltd., St. John, Que., is said to be superior to straw for such decorative items as ladies' handbags. It is produced by winding various colored cellophane strips around kraft paper cords, then weaving them into a colorful fabric; a thin coat of transparent plastic is put on the back to prevent the weave from spreading. Production has been temporarily discontinued. 1 illustration. J.A.B.

PAPER SIZING

HAUG, ARTHUR J. [Panel leader] *and others.* Panel discussion on sizing. Tappi 33, no. 3: 99-104A (March, 1950).

The text of the discussion is reproduced. E.S.

PAPER SPECIALTIES

ANON. Combustion of paper: combustibles, supporters of combustion, and catalysts. Papeterie 72, no. 2: 75-7 (February, 1950). [In French]

Methods for improving the combustibility of cigarette paper are reviewed. 8 references. L.E.W.

ANON. Paper frills for ladies' shops. Paper & Twine J. 24, no. 1: 11, 21 (March, 1950).

The salesman should not overlook ladies' dress and specialty shops as good outlets for paper specialties, as well as the usual wrapping papers, bags, boxes, gummed tapes, and twines. Paper items for the protection of garments are described, such as sanitary paper panties, try-on hoods, dress shields, lip masks, garment covers, and hangers. 4 illustrations. J.A.B.

ANON. The paper milk bottle in Canada. Can. Pulp Paper Ind. 3, no. 3: 6-7, 26, 28 (March, 1950).

The paper milk container has not been adopted as widely in Canada as it has in the U. S., presumably because of its greater cost. The only manufacturer of setup paper milk bottles is Perga Container Ltd., Hamilton, Ont., which uses pure bleached sulfite board to make a waxed container with square shoulders and a round base, tapered slightly to permit nesting. Simple automatic machinery folds the tops and seals them by heat-bonding a special plastic inside the top tab. Somerville Ltd., London, Ont., manufactures a different type of paper milk container, the Pure-Pak (under license from the Ex-Cell-O Corp., Detroit, Mich.), which is shipped in flat blanks to the dairies, where automatic machines shape, glue, wax, sterilize, cool, fill, and seal them in a continuous operation; they are made from .016 solid sulfite (virgin pulp). These containers are compared with the new "Sealking" bottle, developed by Sealright Co., Fulton, N.Y., which is coated with Vinylite resin. The advantages of paper milk containers over glass bottles are considered. 3 illustrations. J.A.B.

DAY, FREDERICK T. Review of 1950 fancy papers. Brit. Packer 12, no. 2: 26, 35, 38 (February, 1950).

The author describes some of the latest designs and styles of boxmaking and fancy papers, such as decorated silk, wool, and cotton flocks; specialized gift wrappings; holiday papers; embossed mica and enameled papers; and wood- and cloth-effect papers. Special designs including names or trademarks may also be printed to order. J.A.B.

EASTMAN KODAK COMPANY. Photographic papers for every professional purpose. Studio Light: 14-23 (January, 1950); Can. Pulp Paper Ind. 3, no. 4: 6-7 (April, 1950). [Abridgment]

Over 300 different papers are currently produced by Kodak, with at least 170 of these intended for the use of the professional photographer. An illustrated general description is given of the manufacturing process; however, no technical details are revealed. Five basic pulps are used; following the conventional papermaking procedure, the newly formed sheet is immersed in a special sizing fluid. The surface is then coated with baryta (barium sulfate of fine particle size), which fills up the crevices and imparts an even, bright, reflecting surface, and calendering further improves the finish. Sensitizing takes place on machines several hundred feet long, in semi-darkness, followed by a thorough inspection. A table lists Kodak's extensive line of photographic papers. 1 table and 13 illustrations. J.A.B.

JAHN, EDWIN C. Plastics and the paper industry. Paper Trade J. 130, no. 8: 124-6 (Feb. 23, 1950).

The growth of the use of plastics in the paper industry, particularly the paper-converting industry, has been spectacular. The breadth and variety of plastics-paper combinations is very extensive. The author reviews methods of application (tub sizing, saturation, beater addition, coating, and film lamination) and discusses different types of paper-plastics combinations, such as sized papers, wet-strength papers, flexible boards, grease- and moisture-resistant papers, pulp molding, coated papers, laminated papers, and laminated structural products. 2 references. E.S.

PAPER SALES. Drive out to the drive-ins—and do some business. Paper Sales 10, no. 3: 20-1, 30, 32 (March, 1950).

Drive-in theaters provide a rapidly growing market for the paper salesman, not only during the summer months, when items for concession stands, rest rooms, and offices are needed, but also when the theater closes for the winter. Outdoor projection booths, in-car speakers, offices, rest rooms, concession stands, and all exposed electrical equipment need protection against corrosion and exposure to the elements, which can be provided by paper products. Speaker units may be left on the posts and protected by polyethylene bags or cellophane inner liners and waterproof outer covers. Projectors are covered with a lubricant, then may be wrapped with noncorrosive greaseproof paper and a waterproof shroud. Rust-inhibitor papers may also be found useful. 5 illustrations. J.A.B.

PAPER SALES. 1950 new products round-up. Paper Sales 10, no. 3: 13-19, 36, 38, 40, 42, 44, 46, 48 (March, 1950); *cf.* B.I.P.C. 19: 570-1.

As a result of a survey among the country's leading suppliers of paper, paper products, and related specialties, an alphabetical list is presented, accompanied by illustrations, of the new and improved products currently being introduced. Paper guest towels, plastic ribbon, plastic brooms, rust-inhibitor paper, self-sealing waxed paper, insulated paper bags, self-sealing satin tape, home freezer kits, and paper garden accessories are a few of the items mentioned. Numerous illustrations. J.A.B.

PHYSICAL TESTING—PAPER—SIZE RESISTANCE

BANKS, W. H., and HARRISON, V. G. W. Further observations on the principles of the K.B.B. galvanic sizing tester. Proc. Tech.

Sect., Paper Makers' Assoc. Gt. Brit. & Ireland 29, no. 1: 249-53 (June, 1948); *cf.* B.I.P.C. 19: 717-18.

These are comments on the previous article by F. Bridge and H. Ainsworth Harrison. E.S.

BRIDGE, F., and HARRISON, H. AINSWORTH. Reply to "Further observations on the principles of the K.B.B. galvanic sizing tester." Proc. Tech. Sect., Paper Makers' Assoc. Gt. Brit. & Ireland 29, no. 1: 255-9 (June, 1948).

This is a polemic reply to the preceding reference. E.S.

PHYSICAL TESTING—PAPER—THICKNESS

CLAPP, C. W., and BERNSTEIN, S. Noncontacting beta-ray thickness gage. Gen. Elec. Rev. 53, no. 3: 31-4 (March, 1950); *cf.* B.I.P.C. 20: 264.

A detailed description is given of the beta-ray gage used by the General Electric Company, which is essentially the same as that described in the previous reference. The gage consists of three major units: the gaging head, containing the radioactive source (Sr^{90}), a beam chopper which interrupts the beam 90 times per second, the motor, an alternator, the ionization chamber, and preamplifier tubes; the operator's panel with all the controls necessary to operate and calibrate the gage, such as the deviation indicator and gage dial; and a cabinet containing the electronic control circuits. 5 figures and 1 reference. J.A.B.

PHYSICAL TESTING—PAPER—VAPOR TRANSMISSION

OSWIN, C. R. Protective wrapping indices. Brit. Packer 12, no. 2: 22-3 (February, 1950).

A theory of the rate of change of moisture content in wrapped commodities has been worked out, and simple calculations can show whether a given wrap is likely to offer sufficient protection to its contents for given storage periods. A standard index figure, the H.V.P. (half-value period), has been proposed, which may be determined experimentally by a described method. A "packaging efficiency" index, used by British Cellophane Ltd., is the theoretical counterpart of the H.V.P. and is calculated by means of a formula. It is expressed in such units that it is numerically equal to the expected H.V.P. at 75° F. The comparison of these two indexes aids in locating packaging faults. 1 table. J.A.B.

PHYSICAL TESTING—PULP—CONSISTENCY

PATTE, W. EDMUND. Consistency determination of groundwood slush pulp. Pulp Paper Mag. Can. 51, no. 3: 214-17 (Convention, 1950).

The precision of different procedures for the determination of groundwood consistency was studied to evaluate the suitability of the various methods as routine tests. It was found that different consistency methods in four mills gave different levels of precision as measured by the standard deviation of replicate determinations on single samples obtained in each mill. The most precise, and probably also the most rapid of the four methods was selected and the tests were repeated by each mill. The good agreement in precisions obtained in the different mills suggests the acceptance of the method as a rapid mill method of well-defined precision. It consists in with-

drawing a 300-gram sample in a copper can with a rolled edge, three inches in diameter and four inches high, transferring the sample to a 600-ml. aluminum beaker, weighing, and filtering on a Buchner funnel containing a tared filter paper. The pad is pressed between blotters in a hand or hydraulic press, dried on a hot plate with a heavy iron top, ironed with a stove-type iron, placed in an oven at 250° F. for 15 minutes, and weighed. The method is considered suitable by the mills and applicable to future projects of the Sub-Committee on Testing of the Physical and Chemical Standards Committee of the Technical Section of C.P.P.A. 2 figures and 4 tables. E.S.

PHYSICAL TESTING—PULP—SURFACE AREA

BROWN, JOSEPH C., JR. Determination of the exposed specific surface of pulp fibers from air permeability measurements. Tappi 33, no. 3: 130-7 (March, 1950).

The exposed or external specific surface of pulp fibers plays an important role in the various properties of a sheet of paper. Since the fluid permeability method has been applied in other fields, its possible application to the paper industry has been investigated. The air permeability method, using a modified Kozeny equation, is feasible for the determination of the exposed specific surface of wood pulp fibers and handsheets. The pore shape factor appears to be constant over a wide range of porosity, whereas the Kozeny factor increases markedly with compaction. Values of exposed specific surface obtained by the air permeability method increase with beating. The area involved in fiber-to-fiber bonding appears to be negligible for handsheets prepared from an unbeaten pulp; for a pulp beaten to a Schopper-Riegler freeness of 610 ml., the area in fiber-to-fiber contact in the handsheets is increased to 25 to 30%. 6 tables, 9 figures, and 36 references. E.S.

PHYSICAL TESTING—WOOD

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Specific gravity (density) and moisture content of pulpwood. Tappi 33, no. 3: 91-4A (March, 1950); *cf.* B.I.P.C. 18: 38.

A revision of TAPPI Tentative Standard T 18 m-47 is presented. E.S.

PLASTIC FILMS (NONCELLULOSIC)

BARRON, HARRY. Plastics films for packaging. Brit. Plastics 22, no. 250: 120-30 (March, 1950).

There is a definite trend toward the increased use of plastic films for packaging in Great Britain. The various types of thermoplastic films, the methods used in their manufacture, and their requirements when used as packaging materials are discussed. Cellulose acetate, ethylcellulose, polyvinyl chloride and copolymers, polyvinylidene chloride, polythene, and rubber hydrochloride are described, and their properties, such as water-vapor transmission, diffusion rate of air, oxygen, and carbon dioxide, water absorption, and chemical resistance, are compared. 11 tables and 14 illustrations. J.A.B.

PLASTICS

ANON. Developments with cold moulding thermoplastic material. Brit. Plastics 22, no. 250: 153-5 (March, 1950); *cf.* B.I.P.C. 19: 718.

Since the previous article on Fibrenyl was written, considerable progress has been made, and a new form of the material has been developed, increas-

ing the fields of application. Formerly Fibrenyl Grade I sheets were supplied in airtight containers in the semidry condition ready for molding; this method is now superseded by supplying completely dry sheets which can be handled without detriment, packed in ordinary packages, and stored for an unlimited time. Before using, the dry sheets are dipped in a reviving solution to restore their original moldability. Grade II is a decorative material similar to Grade I in the wet stage and having a crushed velvet effect in all colors; it is used only as a final skin. The Grade III sheet does not have the same formability as Grade I and is best suited for box-like structures. 5 illustrations. J.A.B.

DIETZ, ALBERT G. H. Structural sandwiches. Technol. Rev. 52, no. 5: 253-6 (March, 1950).

As used in engineering applications, the term sandwich refers to a three-layer material consisting of two thin skins or faces of relatively strong, hard, and heavy material bonded to a thick core of relatively light material, which is usually weaker and softer than the face material. The faces consist principally of aluminum, stainless steel, plywood, and plastics-base laminates. Foamed rubber and plastics; plywood; balsa wood; and honeycomb structures of resin-impregnated paper, aluminum, cotton fabric, and glass fiber fabric are the chief core materials. The bonding agent between the faces and the core must adhere permanently to two dissimilar materials, withstand the fluctuating stresses set up by loads on the structure, and be impervious to attack by moisture, mildew, and vermin; synthetic resin adhesives are widely used for this purpose. The recent developments in the manufacturing of sandwiches for housing and industrial and commercial building applications and the problems which have been encountered are discussed. 9 illustrations. J.A.B.

PLASTICS—TESTING

SIEFFERT, L. E., and SCHOENBORN, E. M. Heat resistance of laminated plastics; evaluation in terms of critical thermal instability temperature. Ind. Eng. Chem. 42, no. 3: 496-502 (March, 1950).

A simple, effective laboratory research procedure has been developed for evaluating the heat resistance of laminated plastics in terms of the critical thermal instability temperature. The rate and extent of thermal decomposition is measured by experimentally determining the loss in weight with time of a number of small specimens maintained at a series of fixed temperatures for periods ranging up to 72 hours. By a simple graphical treatment of the data, the temperature at which the material becomes thermally unstable is readily found. This temperature is called the critical thermal instability temperature. Results obtained for 11 different laminates (including paper-base phenolics) are presented and their relative critical thermal instability temperatures compared. Critical temperatures ranged from 140° C. for a glass-base low-pressure polyester to 350° C. for several glass-base silicones. With the exception of the glass-base melamines, all materials tested showed losses in resin content of less than 7% at their critical temperatures. 3 tables and 7 figures. E.S.

PRINTING AND PRINTER'S INK

HOLLAND, OSBORNE C. Ordering printing inks. Interchem. Rev. 8, no. 4: 113-18 (Winter, 1949-50).

The inkmaker, in order to provide the printer with the correct inks, must be given complete information on every job. He must know not only the process to be used, the type of press, the type of paper or material to be

printed, and the kind of job, but also complete data on all the factors which can affect the final printed result. The author divides the field of printing into the lithographic, typographic (or letterpress), rotogravure, aniline, steel-die, and copperplate processes and discusses each one with regard to the determination of ink formulations. Printing surfaces, such as paper, board, metal, plastics, rubber, pliofilm, cellophane, and cloth are similarly discussed. Special problems are presented by soap wrappers, sausage casings, glass printing, shuck boxes for "strike anywhere" matches, and others. 4 illustrations. J.A.B.

REED, ROBERT F. Characteristics of offset blankets. Modern Lithography 18, no. 3: 32-4, 93, 95, 97, 99 (March, 1950); Graphic Arts Monthly 22, no. 4: 66, 68, 70, 72, 74, 76, 78, 80 (April, 1950).

In a survey conducted by the Lithographic Technical Foundation, in cooperation with American blanket makers, 20 different domestic offset blanket materials were tested in the laboratory for their ability to meet modern offset printing requirements. The results are recorded and compared with results of similar surveys carried out in previous years, indicating that many improvements have been made. The tests were for stretch, hardness and resilience, oil adsorption or embossing tendency, and serviceability or resistance to the development of tackiness or glaze through the action of inks and cleaning solvents. 3 tables and 7 figures. J.A.B.

ZETTLEMOYER, A. C., and NACE, DONALD M. Use of amine additives to prevent drying loss on aging. Ind. Eng. Chem. 42, no. 3: 491-5 (March, 1950).

To prevent loss in drying on aging of printing inks pigmented with alumina hydrate lakes, the investigation of hemin, *o*-phenanthroline complexes of the drier metals, and many other nitrogen-containing additives has been undertaken. The compound DMP-30 [2,4,6-tri(dimethylaminomethyl)phenol] has been found to be the most effective and at the same time the most practical agent of those tested. Excess DMP-30 tends to inhibit drying and to accelerate livering; therefore, it should be used only when needed and then only in amounts of 1 to 2% of the pigment. The mechanism of the activity of DMP-30 has been investigated. The DMP-30 is almost completely adsorbed by the pigment and the amount of cobalt adsorbed is not reduced by its presence. The conclusion is reached that DMP-30 is effective because it changes the acidic nature of the pigment surface. 3 tables, 8 figures, and 8 references. E.S.

RAGS

NICOLETTI, ANTHONY. Cotton cuttings in short supply. Paper Trade J. 130, no. 8: 96 (Feb. 23, 1950).

The continuing increase of new synthetic fibers resulted in a short supply of new cotton cuttings, especially white shirt cuttings, during 1949, and this condition will continue in 1950. Another contributing factor is the expected 10% increase in the fine paper production of 1950. The problem of sorting and eliminating synthetic fibers from new cotton cuttings requires the constant attention of the cotton rag trade and is adding to the labor costs. E.S.

RAYON—STATISTICS

ANON. Cellulose in rayon. Rayon Or'ganon 21, no. 3: 36-8 (March, 1950); *cf.* B.I.P.C. 19: 579.

A total of 476,000 short tons of refined cellulose was consumed by the rayon industry during 1949, a decrease of 12% from the previous year;

this total comprised 358,700 tons of dissolving wood pulp and 117,900 tons of refined cotton linters pulp. The outstanding feature of these data is the 13% increase in the use of refined linters pulp, an all-time high level; the entire offsetting decline took place in the consumption of wood pulp. The increases in linters pulp in the viscose, cuprammonium, and acetate processes were 13, 14, and 21%, respectively. In 1949, the rayon industry consumed 72% of the new supply (domestic production plus imports less exports) of the dissolving grades of wood pulp and 57% of the refined linters pulp. 1 table and 1 graph. E.S.

RAYON OR'GANON. Annual rayon review. Rayon Or'ganon 21, no. 2: entire issue (February, 1950); *cf.* B.I.P.C. 19: 802.

Rayon production in the United States in 1949 totaled about 993,800,000 pounds, 12% below 1948, but 2% above 1947. Compared with 1948, viscose and cuprammonium yarn decreased 3%, acetate yarn 13%, and staple fiber 27%. World production, on the other hand, increased about 9%; the output is estimated at 2,690,000,000 pounds, of which amount rayon yarn accounted for 1,640,000,000 pounds, an increase of 5%, and staple fiber for 1,050,000,000 pounds, an increase of 14%. The entire issue is devoted to statistical information on domestic and foreign rayon production, supplemented by tabulated data and graphs. E.S.

RESEARCH

DENNY, J. L. Packaging research. Proc. Tech. Sect., Paper Makers' Assoc. Gt. Brit. & Ireland 29, no. 1: 241-8 (June, 1948).

The author describes some of the packaging research carried out by PATRA with paper, paperboard, plastic films, and metal foil, including the control of vapor, moisture, and gas (odor) transmission, and the control of micro-organisms and insects. Other packaging problems involve the effect of the structural design on the strength of the package, the importance of moisture content in the paper or board during the various processes, the means necessary to protect commodities against heat or light, and adhesives. In all these cases there is a tremendous amount of experience, but very little real knowledge. The process of fundamental research is necessarily slow and it will probably be years before correct answers are known. In conclusion, the importance of good export packaging is stressed; it is equally important that exporters realize that money spent on good packaging is a sound investment. 3 tables and 1 figure. E.S.

RHEOLOGY

HAUTH, W. E., JR. Behavior of the alumina-water system. J. Phys. Colloid Chem. 54, no. 1: 142-56 (January, 1950).

The development of plasticity in nonplastic systems by grinding and treatment with acid is described. A theory based on fundamental colloidal theory and experimental results is proposed for the formation of alumina suspensions. Rheological data for the alumina-water system are presented. 4 tables, 6 figures, and 7 references. J.O.T.

ROOFING FELTS

ANON. How Bird makes asphalt roofing. Paper Ind. 31, no. 12: 1422-4 (March, 1950).

An illustrated description of the conversion of gray-colored jumbo felt rolls into finished roll roofings and shingles is given, including the saturating, surfacing, and finishing operations, as carried out in the roofing plant of Bird & Son at Norwood, Mass. The base felt is made in the company's

plant at Phillipsdale, R.I., and trucked to the Norwood mill. 1 diagram of the roofing machine and 6 illustrations. E.S.

SALESMEN AND SALESMANSHIP

GILBERT, A. B. I sell ideas—the paper follows. Paper Sales 10, no. 3: 22, 24, 32, 34, 36 (March, 1950).

A successful paper salesman points out that if a customer can be sold on an idea, the paper will sell itself. An illustrative example is his suggestion to a diaper service that wide-mouth bags would be more adequate for soiled diapers than the ordinary kraft bags which were being used; the company now buys these bags from him regularly. Other personal experiences are mentioned to emphasize the importance of recognizing the customer's needs and helping him to improve his business through the use of paper products. J.A.B.

SEMI-CHEMICAL PULPING PROCESS

GAIN, J. C. C. Manufacture of corrugating board by the neutral sulphite process. Pulp Paper Mag. Can. 51, no. 3: 211-13, 217 (Convention, 1950).

The neutral sulfite semichemical process is employed by the Abitibi Power & Paper Co. Ltd. at Sturgeon Falls, Ont., in the manufacture of corrugated board. The process retains the useful hemicelluloses in the fibers and is of particular significance in the pulping of deciduous hardwoods, such as poplar, birch, etc. It consists in cooking with sodium sulfite buffered with sodium bicarbonate, followed by the mechanical reduction of the softened chips to pulp. A general description of the process and the required equipment is given, including wood, liquor preparation, cooking, refining in Bauer refiners, handling on the paper machine, and testing. 5 figures and 3 references. E.S.

SETUP BOXES

ANON. Retailer preference. Modern Packaging 23, no. 7: 82-3 (March, 1950).

After experimenting with new individual half-sized cellophane envelopes for hosiery for about a year, many manufacturers are now returning to the standard-sized setup boxes because of retailer opposition. Consumer and manufacturer acceptance of the prepackaged hosiery has been high, but retailers are reluctant to change their stock arrangement and claim that customers still prefer to examine the stockings they buy. Some prepackaged hosiery, such as Altman's acetate tube package and Macy's private brands, are still being marketed successfully, but a number of quality-hosiery manufacturers have discontinued prepackaging and have redesigned their standard boxes. 3 illustrations. J.A.B.

SHIPPING CONTAINERS

ANON. Cushioned mailing bag for books. Modern Packaging 23, no. 7: 80 (March, 1950).

A single-book mailing bag is made of laminated, moisture-resistant kraft with shredded paper between the outer and inner bag walls as a cushioning material. The bag protects against rough handling and moisture, and its cost and postage charge are the same or less than that for conventional mailer cartons. 1 illustration. J.A.B.

ANON. Trees by mail. Modern Packaging 23, no. 7: 111 (March, 1950).

A metal-end tube of laminated kraft, coated inside with microcrystalline wax for protection against moisture, has been adopted by Earle Dilatush, Robbinsville, N.J., for mailing live holly trees. The container is three inches in diameter and 18 inches long, and consists of two sections, one about twice as long as the other, with an insert to permit the two to be telescoped together. Soil and the roots of the plant are placed in the shorter section and are held in place by a slotted disk of corrugated board. The stem and leaves extend into the upper section, and a printed wrap-around label seals the parts together, identifies the package, and provides a place for the address. 1 illustration. J.A.B.

GAYLORD CONTAINER CORPORATION. Corrugated lugs for tomatoes. Fibre Containers 35, no. 3: 75 (March, 1950); Am. Boxmaker 39, no. 3: 35 (March, 1950).

A paperboard box, lined with a scored pad made of special material and having vent holes cut to coincide with holes in the outer box, serves as an attractive and sturdy package for tomatoes. A tongue on both ends of the body fits through slots at each end of the die-cut lid, and the closing operation is accomplished by folding down the tongue and holding it in place with a wire tie lock. On a test shipment, the average sale price of the fruit shipped in corrugated lugs was 19% higher than that shipped in wooden lugs. 1 illustration. J.A.B.

LAMBRECHT, R. C., and ANDERSON, MARVIN. Packaging parts at General Motors Diesel plant. Fibre Containers 35, no. 3: 18, 20, 25-6, 28 (March, 1950).

A review of the packaging program of the Electro-Motive Division of General Motors Corp., La Grange, Ill., illustrates the versatility and usefulness of paperboard as a packaging medium. The company packages more than 14,500 items in paperboard, with wood used only for the heavy items. The proper planning of a package involves a consideration of how it will best fill the needs of producer and consumer with regard to storage possibilities or readiness for application when received; the ease of ordering and identification of the package; the adequacy of its protection of the product; and the reduction of its weight to a minimum to lower the freight charges. The paperboard container has proved its worth in every respect, as illustrated by specific examples. Packages for head gaskets, glass, delicate instruments, a rewind kit containing 2861 separate pieces, and other replacement parts are described and illustrated. VPI paper is used in the packaging of some parts to protect them against rust and corrosion. 11 illustrations. J.A.B.

MODERN PACKAGING. Baker's breakfast cocoa. Modern Packaging 23, no. 7: 90-5, 160, 163-4 (March, 1950).

One of America's oldest, trade-named, packaged products is Walter Baker's cocoa, which has been made in the same location since 1765. This company was probably the first to market chocolate candy confections in foil, to package unsweetened chocolate in cartons, and to wrap one-ounce prescored squares of chocolate individually. For 150 years, a square tin can was used for packaging cocoa, but during the depression of the 1930's, a fiberboard container was developed which was especially treated to impart greaseproofness, and water-vapor resistance was achieved by the application of a resinous lacquer to the label; metal was still used for the ends. The history of the company, which became a part of General Foods in 1927, is given, as well as that of the famous trademark, the chocolate girl. Extensive advertising and promotion policies have contributed to the success of Walter Baker products, which now number more than 50. 16 illustrations. J.A.B.

SHIPPING CONTAINERS—EXPORT PACKAGING

MARITIME ASSOCIATION OF THE PORT OF NEW YORK. *Packaging Committee.* Export packaging study. Part I. New York surveys. Fibre Containers 35, no. 2: 60, 62-3 (February, 1950); *cf.* B.I.P.C. 20: 519.

This article is a summary of the observations at New York, before and during the loading of the test vessels, in the study of American export packaging and handling conducted by the Committee. An additional report will be made on the analysis of the outturn reports which are now being studied. E.S.

SHIPPING CONTAINERS—MULTIWALL BAGS

CALLAHAN, T. PAT. Approve salvage plan for multiwall bags. Chem. Inds. 66, no. 3: 424, 426 (March, 1950); Paper Mill News 73, no. 8: 34 (Feb. 25, 1950); Southern Pulp Paper Manuf. 13, no. 3: 51 (March, 1950).

In an attempt to stimulate the salvage value of used multiwall paper bags, members of the Paper Shipping Sack Manufacturers' Association have approved a system of marking with a standard symbol all multiwall bags made of natural kraft paper suitable for repulping. The symbol "ANK" (all natural kraft) is to be printed just above or below the Consolidated Freight Classification certificate; its use is entirely optional. J.A.B.

LAHEY, R. W. Multiwall bags. Chem. Eng. 57, no. 3: 201-5 (March, 1950).

Multiwall paper shipping bags, which are fabricated from the cheapest of packaging materials and have the advantages of a completely flexible container, are becoming increasingly useful in transporting chemicals. These bags consist of three to six plies of kraft paper of tubular form, each ply designed to provide a special type of protection, such as resistance to grease and oil penetration, abrasion, acids and alkalies, etc. The side seams are pasted, with waterproof glue if necessary, and bottoms are closed by pasting, sewing, or taping. Open-mouth sacks are closed after filling by sewing, taping, or wire or string tying, whereas valve bags are closed at the top and bottom by the manufacturer, leaving only a small opening in one corner, which is self-closing. Committee D10 of A.S.T.M. has developed an accelerated test, soon to be published as a tentative standard, for determining the required mechanical strength of a multiwall bag. The development of a process for coating polyethylene onto kraft bag paper has greatly increased the versatility of these bags. 5 illustrations. J.A.B.

POCTA, FRANK. The multiwall paper shipping sack industry. Paper Trade J. 130, no. 8: 80 (Feb. 23, 1950).

Over two billion multiwall shipping sacks were in service during 1949; 27.59% was used for agricultural products, 29.19% for building materials, 33.47% for chemicals, 7.26% for minerals, and 2.49% for miscellaneous products. The total volume produced was 12.25% less than in 1948; however, packers and shippers reduced their heavy inventories, so that actually more sacks were used than during any previous year. There are at least 450 different types of commodities for which suitable multiwall constructions have been developed since 1925; examples of their extensive versatility are given. In 1945 there were 34 plants in the United States producing multiwall shipping sacks; today there are 46. The Technical Committee of the Paper Shipping Sack Manufacturers' Association has for years encouraged the research consciousness of its members. E.S.

SHIPPING CONTAINERS—PALLETIZING

ANON. Interlocking shipper. Modern Packaging 23, no. 7: 96-7 (March, 1950).

A recent innovation in palletized loading is a "nesting" corrugated shipping container, featuring a recessed bottom and an extension top, so that the top of one container fits into the bottom of the next one. The bottom is a separate piece in the form of a tray-like insert that is inverted so that the flaps extending from the solid bottom panel serve as bracing struts next to the side walls. The container is particularly advantageous for shipping glass items since the bottom never touches the floor, and its construction provides it with a resiliency that cushions an impact. Crisscrossed tiering and steel strapping are unnecessary to prevent shifting. The cost is approximately 15% more than the conventional corrugated containers. 7 illustrations. J.A.B.

SLIME PREVENTION

BERG, HARVEY E. Consideration of microbiological control in paper for food packaging. Paper Mill News 73, no. 11: 8, 23 (March 18, 1950).

The chlorinated phenols, when properly selected and fortified with other ingredients, such as stabilizing agents, dispersants, etc., are claimed to provide a flexible answer to the general control of a diversified slime flora in mills making paper for food packaging. When proper precautions are taken to prevent excessive agglomerations in the pulp system, there is no likelihood of difficulty with chlorinated phenols from either odor or toxic physiological effects. E.S.

BUCKMAN LABORATORIES, INC. Slime control in pulp and paper mills. Paper Mill News 73, no. 11: 15, 18-22 (March 18, 1950); *cf.* B.I.P.C. 20: 272.

Essentially the same information is presented as in the previous article. E.S.

GENERAL DYESTUFF CORPORATION. Balanced slime control. Paper Mill News 73, no. 11: 12 (March 18, 1950); *cf.* B.I.P.C. 18: 788; 19: 585.

A summary of the information given in previous articles is presented. E.S.

MCKEE, WILLIAM N. Slime boards widely used. Paper Mill News 73, no. 11: 12, 23 (March 18, 1950).

Operating efficiency is the general criterion by which slime control is judged. The efficiency is defined as the percentage actually produced of the theoretical tonnage of paper which the machine should produce at its designed speed and the basis weight being run; 95% efficiency is regarded as an indication of good slime control. Slime-board readings are very widely used today; however, they do not correlate with operating efficiency. They indicate the rate of build-up of slime, whereas operating inefficiencies caused by slime result from the loosening of accumulated slime or floating slime. An inspection of the machine constitutes the simplest method of slime evaluation. On cylinder machines with open spiders, a clean spider with no adhering slime and without slippery feel is the best indication of good control. On Fourdrinier machines, the edge of the wire pit is the best spot to examine; if the side of the pit feels rough, slime control is adequate. E.S.

STARCH

BARKER, S. A., BOURNE, E. J., WILKINSON, I. A., and PEAT, S. The enzymic synthesis and degradation of starch. Part VI. The properties of purified P- and Q-enzymes. J. Chem. Soc.: 84-92 (January, 1950); *cf.* B.I.P.C. 20: 119.

Directions are given for the preparation of the phosphorylase (P-enzyme) and the cross-linking enzyme (Q-enzyme) of potato as stable, freeze-dried powders. The freeze-drying must be carried out in a citrate buffer of pH 6-7, otherwise both enzymes are destroyed. The purified P-enzyme (fraction P2) contained no maltase and only traces of Q-enzyme or the normal amylases. It showed a slight phosphatase activity on glycerophosphate but not on glucose 1-phosphate. The purified Q-enzyme (fraction Q3) was substantially free from maltase, the amylases, and phosphatase. It contained a little P-enzyme, equivalent to 5% of that in the original juice. Fraction P2 *per se* has no effect on the viscosity of starch paste. Q-Enzyme, on the other hand, has a striking liquefying action, in the presence or absence of phosphate. Q-Enzyme has a strong accelerating effect on the rate of synthesis of polysaccharide from glucose 1-phosphate by P-enzyme. Q-Enzyme is irreversibly inactivated by being precipitated from an aqueous solution by acetone. The conversion of amylose into amylopectin by Q-enzyme is not inhibited by phloridzin; moreover, the synthetic activity of P-enzyme is retarded only slightly by phloridzin. 8 tables and 3 figures. E.S.

BARKER, S. A., BOURNE, E. J., WILKINSON, I. A., and PEAT, S. The enzymic synthesis and degradation of starch. Part VII. The mechanism of Q-enzyme action. J. Chem. Soc.: 93-9 (January, 1950).

The results reported in the earlier communications in this series are reviewed and correlated with the observations recorded in this paper. Evidence is given which proves, beyond reasonable doubt, that Q-enzyme functions by a nonphosphorolytic mechanism. In this and in other properties it appears to be distinct from the isophosphorylase (also from potatoes) by Bernfeld and Meutémédian (*cf.* Helv. Chim. Acta 31: 1724-39 [1948]). It is concluded that Q-enzyme is a transglucosidase, but not of the phosphorylase type, and that two amylopectin-synthesizing systems represented by Q-enzyme and isophosphorylase may exist together in the potato. 8 tables. E.S.

STATIC ELECTRICITY IN PAPER

ANON. Static. Am. Pressman 59, no. 10: 42, 44, 46, 48 (September, 1949); Share Your Knowledge Rev. 31, no. 3: 25-7 (January, 1950).

Static electricity in the pressroom may prevent satisfactory jogging, interfere with register, and cause offset, feeding problems, and frequent press stops because of difficulties encountered in the control of the sheet or web of paper. The general expedients of the printer (the introduction of moisture into the air, the use of wire or tinsel to carry the static from the sheet to the ground, the use of oil and grease on the packing, neutralizers, and sheet heaters) and their effectiveness are discussed. In general, neutralizers are the most satisfactory preventative. The introduction of moisture will stop the static but introduce other problems, such as register troubles. All other makeshifts may help in certain cases and not be effective at all in others. There seem to be isolated conditions other than temperature and humidity which may cause static. An example of faulty wiring is cited which created

static during the most humid summer months when there was no evidence of it in any other place. E.S.

STATISTICAL METHODS

BURBIDGE, HARRISON G. Application of statistical mathematics to industrial experimentation. Pulp Paper Mag. Can. 51, no. 3: 168-73 (Convention, 1950).

The author shows that sets of numbers arising from repeated measurements convey specific meaning through their relations to each other. These relations are summarized by such statistics as the average and the various measures of the spread of the data. Of these, the one used in analyzing experimental results is the variance which can be broken down by mathematical treatment to reveal to what extent various causes contribute to the over-all variability. The manner in which these variances are related to a fundamental law of probability, and how this relation may be used to guide the formation of conclusions is illustrated by a practical application. 6 tables, 1 diagram, and 2 references. E.S.

STEAM POWER

BLUM, SAMUEL, and ROHRBAUGH, NEVILLE B. Byproduct power betters paper mill service. Power 94, no. 3: 94-7 (March, 1950).

The power-plant modernization program of the P. H. Glatfelter Co. at Spring Grove, Pa., is described. It included the construction of a new three-drum, bent-tube boiler and the revamping of the two existing boilers; all three are designed for the firing of pulverized coal or oil. Two new extraction-condensing turbine generators were installed in addition to the one existing unit; any two of the three turbines can carry the entire plant load. Under the new setup, the electrical energy is generated at two voltage levels, one at 600 volts for points near the turbine room, and the other at 2300 volts for remote electrical loads. Two-way transformers connect both distribution systems to give maximum continuity as well as flexibility. The local public utility parallels on the 2300-volt bus. A load limiter, which reacts on either condensing turbine, holds the energy supplied by the utility to a predetermined setting. The new plant already shows a saving of $3.22 for fuel and power per ton of paper produced. 1 table showing principal power-service equipment, 1 steam-flow diagram, and 5 illustrations. E.S.

CALDWELL, J. Heat and power supplies for papermills. Proc. Tech. Sect., Paper Makers' Assoc. Gt. Brit. & Ireland 29, no. 2: 501-23; discussion: 524-9 (December, 1948).

The basic features of heat and power plants in Great Britain are reviewed. Under normal conditions the bleeder-type installation is considered to offer the best combination of economy and flexibility. A method of calculating power costs is presented. The rise in fuel prices is shown to have important consequences for the application of bleeder-type installations. It may be taken as certain that the relatively high cost of coal is likely to be a permanent feature of the British economy; hence, it is suggested that there must be a gradual raising of initial pressure and temperature conditions if this method of power generation is to continue to show its former advantage over purchased electricity produced in power stations. 7 tables and 14 diagrams. E.S.

WELSH, J. N. How to prevent condensate contamination. Paper Ind. 31, no. 12: 1428-30 (March, 1950).

Several examples of recent troublesome condensate contaminations are

described (rosin-size, starch-size, fuel-oil, and waste-water contamination) to draw the attention of the engineer to potential trouble spots which should be examined periodically, such as size tanks, digester heat exchangers, fuel-oil heaters, condensers, etc. Such vigilance will pay dividends, because a major boiler shutdown with a concomitant loss in production can be inordinately expensive. 1 diagram. E.S.

STRAW

ATCHISON, JOSEPH E. Processes being used in Europe for manufacture of straw pulp. Tappi 33, no. 3: 42A, 44A, 48A, 50A, 52A (March, 1950); Paper Mill News 73, no. 12: 44, 46, 76 (March 25, 1950); *cf.* B.I.P.C. 20: 429-30.

Brief descriptions of some European straw-pulping processes are given, including the lime process, the caustic soda and sulfate process, the monosulfite process, the Marsoni process, the Huguenot process, the Celdecor-Pomilio process, and a semichemical process used at the Thames Board Mills, Ltd. for the manufacture of board. E.S.

STREAM POLLUTION

NATIONAL COUNCIL FOR STREAM IMPROVEMENT (of the Pulp, Paper, and Paperboard Industries), Inc. Abstract of 1949 annual report. Paper Trade J. 130, no. 10: 16, 18-20; no. 11: 22, 24-8, 40-1 (March 9, 16, 1950).

The activities of the Council during 1949 are reviewed, including regional and national developments, research activities at the various co-operating institutions, and development and mill service activities. 6 illustrations. E.S.

SULFATE MILLS

ANON. Kraft mill intensifies wood recovery. Paper Mill News 73, no. 12: 60, 62 (March 25, 1950); *cf.* B.I.P.C. 20: 351.

Brief reference is made to the new 200-ton bleached kraft pulp mill of Weyerhaeuser at Longview, Wash. 1 aerial view of the company's Pulp Division. E.S.

SULFITE PROCESS

POTTER, G. J. C. A review of the literature on the sulphite process, September, 1948-August, 1949. Pulp Paper Mag. Can. 51, no. 3: 300, 302, 304, 306 (Convention, 1950); *cf.* B.I.P.C. 19: 589.

Continuing the previous review, the literature on the sulfite process up to the discharge of the pulp from the digesters (exclusive of the disposal and utilization of the sulfite waste liquor) is covered under the headings: general, wood quality, acid making, cooking liquor, circulation and digester control, pulping reactions, sulfur dioxide recovery at blow and washing, and the neutral sulfite semichemical process. 32 references. E.S.

SULFITE WASTE LIQUOR

PEARL, IRWIN A. Studies on lignin and related products. II. 5-Carboxyvanillic acid in the bisulfite-soluble fraction from the silver oxide oxidation of fermented sulfite spent liquor. J. Am. Chem. Soc. 72, no. 3: 1427 (March, 1950); *cf.* B.I.P.C. 19: 777.

In the first part of the article on the silver oxide oxidation of basic

calcium lignosulfonate, the isolation of substantial amounts of a 21% sodium bisulfite-soluble fraction which contained only small percentages of vanillin was noted. The bisulfite-soluble fraction from a similar silver oxide oxidation of a *Torulopsis utilis* fermented sulfite waste liquor has been found to contain at least 50% 5-carboxyvanillic acid. The product obtained on distillation and crystallization of this fraction was found to be identical with the 5-carboxyvanillic acid reported by Freudenberg, Klinck, Flickinger, and Sobek (*cf.* B.I.P.C. 9: 297). 2 references. E.S.

TALL OIL

SNELL, FOSTER DEE, and REICH, IRVING. Physical-chemical properties of tall-oil soap solutions. J. Am. Oil Chemists' Soc. 27, no. 3: 73-4 (March, 1950).

Acid-refined tall oil was separated into resin acid and fatty acids of approximately 94% purity, made into soaps, and compared with those made from oleic acid and rosin. Tall oil resin-acid soaps, like rosin soaps, are much less effective than fatty soaps in lowering surface tension and in dispersing an artificial soil. These properties correlate, respectively, with the poor foaming and detergency values of such soaps. However interfacial tension values for the resin soaps and oleic acid soaps do not differ substantially. Thus resin-acid soaps and rosin soaps would not be ineffective in wetting oily surfaces. In general, mixtures of resin-type and fatty-type soaps have values for these physico-chemical constants which are in between the values for the separate soaps, but this does not mean that the effects are linearly additive. On the contrary, there are marked deviations from linearity, particularly in surface tension effects, where the more active fatty soaps predominate even when present in rather small proportions. 2 tables and 6 references. E.S.

TARIFF

ANTHONY, RICHARD H. Tariffs and their relation to the domestic economy. Paper Trade J. 130, no. 8: 126-8 (Feb. 23, 1950).

Supplemented by different examples, the author discusses the unavoidable repercussion of tariff slashing on the U. S. economy without solving the trade-gap problems. The tariff should not be regarded as a tool with which the international trade account can be tinkered into balance. E.S.

BECKETT, WILLIAM. Tariff reduction and currency devaluation; their effect on the pulp and paper industry. Paper Trade J. 130, no. 8: 98, 100, 102, 104 (Feb. 23, 1950).

A general discussion on tariff and currency adjustments is presented. E.S.

TEXTILE INDUSTRY AND FABRICS—FIREPROOFING

BUCK, GEORGE S., JR. Statutory requirements for flame resistance in textiles. Ind. Eng. Chem. 42, no. 3: 428-30 (March, 1950).

All cellulosic fibers are combustible. The ease with which textile fabrics made from these fibers ignite and their manner of burning differ widely, but the differences are the result of their fabricated form as cloth structures rather than of differences in the combustibility of the fibers themselves. In certain uses, a fabric having any degree of combustibility may be a fire hazard, whereas in other uses only fabrics that burn with unusual rapidity or volume of flame could be considered potentially dangerous. In

order to provide the greatest possible safety against fires, statutory restrictions upon the use of combustible textiles require flame-resistant properties in some applications and place limitations on the maximum rate of burning in others. 2 figures and 2 references. E.S.

FAIN, J. MITCHELL. New flameproofing agents more durable and efficient. Chem. Inds. 66, no. 3: 360-1, 468 (March, 1950).

Extensive investigations have been carried out in the development of flameproofing methods, and some of the resulting agents are described. The Chemical Welfare Service Development Laboratory at M.I.T. developed a formula for water-resistant flameproofing, using antimony trioxide in a Vinylite binder. The treated fabric is unaffected by laundering and dry-cleaning solvents, except those which are chlorinated. A water-soluble flameproofing formula which has been recommended by the National Research Council Laboratories at Columbia University for general clothing use consists of borax, boric acid, diammonium phosphate, and water. One of the newest durable-type flame-retardant chemicals is Du Pont's Erifon, which is a solution of titanium and antimony salts. When properly applied, this chemical has no effect on draping qualities, appearance, or strength of cotton or rayon fabrics. In addition to these requirements for textile application, a flame-retardant should be economical, easy to apply, and nontoxic. Fire-resistant paint for the protection of wood surfaces against flying sparks and burning materials is also available; chlorinated paraffin may be used in such paints without a deleterious effect on their durability. The action of flameproofing agents is not completely understood, but several possible explanations are suggested. 2 illustrations. J.A.B.

GULLEDGE, HUGH C., and SEIDEL, GEORGE R. Durably flame-retarding cellulosic materials. Ind. Eng. Chem. 42, no. 3: 440-4 (March, 1950).

The authors describe a new method for durably flame-retarding cellulosic materials such as cotton and viscose. The chemical employed is based on an aqueous titanium-antimony complex known as Erifon flame retardant which, after a two-step process, appears to combine chemically with the cellulose molecule. Methods and problems of application and properties of a variety of treated fabrics are discussed, and limitations as to durability, dyeing, and fields of application are pointed out. Technical aid is necessary before an individual mill can satisfactorily apply this process; several mills are now equipped to operate on a commercial scale. 4 tables, 2 figures, and 5 references. E.S.

LITTLE, ROBERT W., CHURCH, JAMES M., and COPPICK, SYDNEY. Commercial application of flame-resistant finishes. Ind. Eng. Chem. 42, no. 3: 432-40 (March, 1950).

Flame retardants for application to textile fabrics may be subdivided into water-soluble salts and durable finishes, capable of resisting wet- and dry-cleaning operations. The two principal groups of water-soluble salts and mixtures are: those capable of forming thermostable foams at flame temperatures, and the thermolabile inorganic and organic salts of the mineral acids. Durable flame-resistant finishes may be classified as double-bath treatments, dispersions of the emulsion or solvent-suspension type, and modified cellulose processes wherein reaction with the cellulose molecule is obtained. Because the protection afforded by soluble salts is of a transient nature, they are generally applied to fabricated textile items by dipping, spraying, and brushing or by commercial laundry impregnations. Durable or semiperma-

nent finishes are applied in the finishing mill, for the most part on routine padding and drying equipment. Two-bath processes appear to be of increasing interest, despite the careful controls required in plant processing. Although restricted in application because of solvent-removal and recovery problems, solvent-suspension processes are regularly applied to heavyweight fabrics. Emulsion formulations lend themselves readily to plant processing on available mill equipment. The modified cellulose finishes have been successfully adapted to mill operations. The continued improvement of flame-resistant finishes may be expected as a result of current research and development programs. 5 diagrams and 33 references. E.S.

TEXTILE INDUSTRY AND FABRICS—TESTING

CHURCH, JAMES M., LITTLE, ROBERT W., and COPPICK, SYDNEY. Evaluation of flame-resistant fabrics. Ind. Eng. Chem. 42, no. 3: 418-27 (March, 1950).

The acceptability of any flameproofed fabric for a given purpose is dependent not only upon its flame resistance, but also upon other textile characteristics which may be altered by the flameproofing treatment employed. The type of flame-retardant chemical and the conditions used for its incorporation within the fabric not only affect the characteristics of the finished cloth, but also restrict its use for certain applications. The flammability of a fabric is a factor of the combustibility of fiber, type and weight of weave, and effectiveness of any added flame-resistant treatment. The determination of the flame resistance of fabrics has recently been investigated by many laboratories. During the war an intensive study of this problem was made, the results of which have led to a standardization of flame test methods for a wider acceptance and better agreement between laboratories. Uniform and consistent results have been obtained by the establishment of rigid procedures for flame tests, which now make it possible to measure the comparative effectiveness of various flame-resistant treatments and determine the relative value of flame-resistant fabrics for any given purpose. Consideration has been given to not only the extent of flaming produced in the combustion of the fabric but also the rate of burning and the duration of the afterglow, and the use of the vertical, horizontal, and angle tests. Other methods for testing the acceptability of flame-resistant fabrics include durability to leaching by tap water, sea water, perspiration, and detergent solutions; deterioration of the fabric or its flame-resistant characteristics in storage or actual use; measurement of fabric strength and porosity; and physiological effects of flame-resistant treatments, such as toxicity, skin abrasion, and heat load. 4 tables, 3 figures, and 11 references. E.S.

JOHNSTONE, EDWIN P. A study of some of the factors involved in measuring flammability of consumer textiles. Am. Dyestuff Reptr. 39, no. 6: P194-7 (March 20, 1950); *cf.* B.I.P.C. 17: 318.

A brief report is given of an investigation sponsored by the Committee on Flammability of Consumer Textiles of the American Association of Textile Chemists and Colorists. A modification of the A.A.T.C.C. flammability tester, which eliminates the sample-supporting wires and utilizes a new type of sample holder, is more easily manipulated and permits various testing operations to be carried out without further handling of the test strip prior to the rate-of-burning determination. The installation of an electrical timing system allows more precise measurement of extremely rapid burning, and counterbalancing weights and other changes in the leverage system improve the mechanical timing device. Variations between individual samples and

the reproducibility of test results appear to be dependent upon fabric variation and differences in nap or pile of a fabric. This was especially apparent in tests carried out on chenille fabrics. It is suggested that a satisfactory test method should include means of determining the potential flammability hazard of a fabric under the worst and the best conditions of normal usage. 1 illustration, 3 graphs, and 1 table. J.A.B.

TRADE-UNIONS

BURKE, JOHN P. Labor's interest in the pulp and paper industry. Paper Trade J. 130, no. 8: 105-6 (Feb. 23, 1950); Paper Mill News 73, no. 8: 58, 60 (Feb. 25, 1950).

The author refers briefly to the advantages of the pulp and paper industry as such and to those it offers to its approximately 500,000 workers, of which about 250,000 are union members. There have been very few strikes in the pulp and paper industry during recent years, because management and labor have tried to co-operate with each other. By outlawing the conditions which encourage strikes, the author hopes to see the time when strikes are outlawed, not because of legislation, but by the mutual understanding of management and labor. He considers that the greatest change which has taken place during the 33 years of his presidency of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers is the changed attitude of employers toward the unions. Where the employer still harbors thoughts of fear about the union, it is the task of the union leader to eliminate that fear by showing that the union wants to work with and not against him and his company. Good labor relations and industrial peace must be based upon justice, good will, and mutual faith and confidence. The government should not do for the industry what the industry should do for itself. E.S.

WAGES

OWEN, RAYMOND S. A wage incentive plan in a box plant. Fibre Containers 35, no. 2: 42, 44; no. 3: 58-9 (February, March, 1950).

An operating policy that is based on a studied inclusion of the many incentives to do a good job is often referred to as incentive management. The basis of this plan is an arrangement for offering financial rewards to the factory workers for their units of production and the quality of production. If a wage-incentive plan is installed under good leadership, is based on appropriate methods-time study practices, and is part of a manufacturing plan that recognizes the worker as an individual, it will be a profitable investment to the company and all its members. The application of time and methods studies to box plants presents a special problem, since most of the work is done by machinery and is machine-paced. However, it is pointed out that the worker's skill, effort, and knowledge in performing an operation affects the amount and quality of production, and financial rewards may logically be based on these attributes. 1 table and 5 references. J.A.B.

WASTE PAPER

HERSHMAN, S. I. 1949 with a twist on 1950 in the waste paper industry. Paper Trade J. 130, no. 8: 94, 96 (Feb. 23, 1950).

The author analyzes the trends in the waste-paper industry during 1949, with emphasis on the need for stability in the future. Quality must be maintained and the industry must conduct research to find new uses for its product. Waste paper dealers and their customers must recognize that their interests are mutual. E.S.

WET STRENGTH

GRUNTFEST, I. J., and YOUNG, E. M., JR. Action of some formaldehyde resins on paper. Pulp Paper Mag. Can. 51, no. 3: 190-3, 199 (Convention, 1950).

The chemical and physical differences of urea-formaldehyde resins and possible variations in their structure are discussed. A few laboratory experiments are described which show the influence of simple changes in the resins on the wet and dry strengths and absorbency of a treated bleached sulfite saturating paper, resulting from the location of the resin in or on the fibers. Resin on the fibers (as produced by the more highly condensed resins) is accompanied by reductions in absorbency and substantial gains in dry and wet tensile strengths, whereas resin in the fiber (low condensed resins) is not accompanied by a reduction in sheet absorbency, and the gains in wet and dry tensile strengths are smaller. The location of the resin in the sheet has a profound effect on other mechanical properties. Resin outside the fibers interferes with their movement relative to each other and stiffens the sheet to a much greater extent than resin inside the fibers. The data also indicate that paper absorbency is an interfiber rather than an intrafiber phenomenon, since the paper with the resin inside the fibers has unimpaired absorbency. Both urea and melamine resins show similar effects under laboratory conditions. In practice, the more rapid rate of cure of melamine resins is significant. 5 figures and 4 references. E.S.

WOOD—CHEMISTRY

HECHLER, GEORG. Action of nitrating acid mixtures on woods. Holzforschung 4, no. 2: 33-44 (1950). [In German]

Sprucewood (I), beechwood, and wheat straw (II) were treated with various nitrating mixtures (some of which contained 60-70% sulfuric acid, others of which contained no sulfuric acid, but various amounts of potassium nitrate or methylene chloride) and 98% nitric acid. Yields, percentage of nitrogen, stability, percentage of methoxyl groups, and solubility in a variety of organic solvents were determined. For a given set of conditions, (I) usually gave the highest and (II) the lowest yields of nitrated products. The effects of temperature and premethylation of (I) were also studied, as were the effects on nitration of delignification (by means of chlorine dioxide), prehydrolysis (with 30% sulfuric acid at 70° C.), and pretreatment with 10% sodium hydroxide at room temperature. The results, given in great detail, are tabulated and fully discussed. A certain number of the nitration products were also denitrated (with ammonium sulfide in alcohol), and the products examined for yield, residual nitrogen, pentosan, lignin, and methoxyl. 15 tables and 15 references. L.E.W.

WOOD—EXTRACTIVES

ERDTMAN, HOLGER, and LINDBERG, BENGT. Constitution of resin phenols and their biogenetic relations. XIII. β-Nor-conidendrin. Acta Chem. Scand. 3, no. 8: 982-4 (1949). [In English] *cf.* B.I.P.C. 19: 208.

Using pyridinium chloride, α-conidendrin was demethylated to yield 85% β-norconidendrin, melting at 248-249° C.; tetraacetate, melting at 174-175° C.; tetramethyl ether, melting at 139-140° C., solidifying and remelting at 153° C. (identical with Holmberg's product from conidendrin, thus indicating that the norconidendrin belongs to the β-series). 8 references. L.E.W.

ERDTMAN, HOLGER, and RENNERFELT, ERIK. Fungicidal properties of some constituents of the heartwood of *Tetraclinis articulata* (Vahl) Masters. Acta Chem. Scand. 3, no. 8: 906-11 (1949). [In English]

Tetraclinis articulata (the lignin of which contains syringyl groups, despite the fact that it is a conifer) is the source of sandarac resin. It contains carvacrol, hydrothymoquinone and thymoquinone. The toxicity of these compounds and of thymol has been studied. Hydrothymoquinone is about as active against wood-destroying fungi as is phenol. Thymoquinone is more toxic than the hydro compound. Thymol and carvacrol are more effective fungicides than hydrothymoquinone. The activity of the compounds against germination of conidia of *Polyporus annosus*, blue stain fungi, and organisms related to yeasts was also studied. 7 tables and 10 references.

L.E.W.

LINDBERG, BENGT. Demethylation of pinosylvin monomethyl ether. Acta Chem. Scand. 3, no. 8: 912-13 (1949). [In English]

Pinosylvin monomethyl ether was converted into 90% pinosylvin, melting at 154-155° C., by means of pyridinium hydrochloride. 3 references.

L.E.W.

LINDSTEDT, GÖSTA. Constituents of pine heartwood. XV. The heartwood of *Pinus excelsa* Wall. Acta Chem. Scand. 3, no. 10B: 1375-80 (1949). [In English] *cf.* B.I.P.C. 20: 525.

As previously described the heartwood was extracted with ether and acetone. These led to the following components: "membrane substances" (0.13%); pinitol and L-arabinose (0.11%); chrysin (0.07%); tectochrysin (0.07%); pinobanksin (0.13%); pinocembrin (0.01%); pinosylvin monomethyl ether (1.4%); neutral fraction (0.5%). Thus the pinosylvin ether yield was very high. 1 table and 4 references. L.E.W.

LINDSTEDT, GÖSTA. Constituents of pine heartwood. XVI. The heartwood of *Pinus virginiana* Mill. Acta Chem. Scand. 3, no. 10B: 1381-4 (1949). [In English]

This heartwood yielded 0.12% membrane substances, 0.13% L-arabinose, 0.24% pinobanksin, 0.09% pinocembrin, 0.001% pinosylvin monomethyl ether, and 0.30% total neutral fractions. 1 table and 5 references.

L.E.W.

WOOD—MENSURATION

PASCOE, TRUMAN A. Wood evaluation by photo. Pulp & Paper 24, no. 3: 76, 78 (March, 1950); *cf.* B.I.P.C. 14: 34; 15: 489.

The Nepco photographic process and apparatus for the evaluation of pulpwood in piles is described briefly (*cf.* Keepers, Cecil H. U. S. patent 2,424,619, issued July 29, 1947). 1 illustration. E.S.

WOOD OPERATIONS

DENNIS, HENRY. Improved logging methods. Paper Trade J. 130, no. 12: 27-8, 30 (March 23, 1950).

The author discusses the advances in Pacific Coast logging methods and equipment during recent years. E.S.

MCKENZIE, A. R. Reproduction of pulpwood stands. Pulp Paper Mag. Can. 51, no. 3: 245-6, 248, 250, 252, 254, 256, 258 (Convention, 1950).

A brief description of existing regeneration conditions in the Cochrane District, particularly the Iroquois Falls Concession, is given; some points are outlined which may warrant discussion, such as survey methods, the appropriate time for surveys, the requirements for successful reproduction, the improvement in natural reproduction of spruce-balsam areas, etc. In conclusion, Abitibi's plans for future regeneration studies are discussed. E.S.

MAIR, W. E. Marathon's experience with high-lead cable yarding. Pulp Paper Mag. Can. 51, no. 3: 260, 262, 266, 268, 272 (Convention, 1950).

The author describes the development of the system of cable yarding at the Marathon Paper Mills of Canada Ltd., the development of donkeys, and the development of sleds and "A" frames. 3 tables. E.S.

SONLEY, G. R. Cable yarding in relation to forest management. Pulp Paper Mag. Can. 51, no. 3: 274, 276 (Convention, 1950).

The author discusses the advantages of cable yarding as practiced by Marathon in its relation to forest regulation. Cable yarding made possible the development of the compartment system and intensive forest management and has solved the problem of natural jack pine regeneration. The compartment system (with a camp located near the center from which the whole compartment will be logged) is characterized by flexibility and the establishment of roads which make the area accessible to men and machinery to fight fires, carry out entomological programs, etc. E.S.

WOOD WASTE

HAMILTON, A. D. Manufacture of wrapper from bark. Pulp Paper Mag. Can. 51, no. 3: 205-10 (Convention, 1950).

Woodroom waste in most mills presents a serious disposal problem and has no economic value. In an effort to develop a use for it, work was carried out at The Ontario Paper Co. Ltd., and the Quebec North Shore Paper Co. on its conversion to a suitable wrapper for newsprint through the period 1945-47. The results indicated that bark alone cannot be developed economically for this use but that woodroom waste which contains bark and a wood fraction can be converted into a usable wrapper. Its application to any individual mill is governed by the economic factors of freight, chemical costs, capital costs of construction, cost of present wrapper used, and integration of bark wrapper with existing mill operation. The method of conversion of the woodroom waste and the properties of the resulting products are discussed. 7 tables and 4 figures. E.S.

X-RAY RESEARCH

HERMANS, P. H., VERMAAS, D., and WEIDINGER, A. Recrystallization of regenerated cellulose upon mercerization. Nature 165, no. 4189: 238 (Feb. 11, 1950); *cf.* B.I.P.C. 19: 883-4.

The authors report that a recrystallization similar to that formerly achieved by acid hydrolysis may also be effected by mercerization. Rayon fibers were soaked in 18% caustic soda solution for 10 minutes, freed from

lye by pressing between filter paper, and put into boiling water to remove the residual caustic soda, then rinsed and dried. X-ray examination yielded crystallinity values ranging from 50 to 55%. Whether the results of this experiment can be explained in the same way as the acid hydrolysis recrystallization has yet to be investigated. 2 references. J.A.B.

TREIBER, E. New measurement of the fiber diagram of cellulose hydrate. Monatsh. 80, no. 5: 735-7 (October, 1949). [In German]

The author's x-ray measurements of viscose fibers are compared with the data obtained by previous investigators. The results are tabulated; the slight differences in the values are of no practical significance. 1 table and 9 footnotes. E.S.

YEAST

BRAUN, KARL. The age distribution of nutrient yeast (Torulopsis utilis) in a continuously operated fermentor. Correction. Das Papier 3, no. 23/24: 490 (December, 1949). [In German] *cf.* B.I.P.C. 20: 358.

Two printing errors in formulas (3) and (4) of the original text are reported; of these, only formula (3) was included in the abstract and was given correctly. E.S.

Patent Section

Although the abstracts of the United States patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. The abstracts of the Canadian patents are prepared from the claims published in the* Canadian Patent Office Record. *In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Until the printing branch is in full operation and up to date, the printing of specifications will be several months behind.

BARKERS AND BARKING

BOUCHARD, OREZUL. Portable log-debarker having swingable frame mounting a driven feed wheel. U. S. patent 2,498,786. Filed Sept. 30, 1946. Issued Feb. 28, 1950. 2 claims. [Cl. 144-208]

This is similar to Canadian patent 448,229; *cf.* B.I.P.C. 18: 721.

E.G.S.

JOHNSON, GEORGE M. Log barker having water-jets oscillatable about longitudinal log axis. U. S. patent 2,501,848. Filed April 10, 1946. Issued March 28, 1950. 4 claims. Assigned to Rayonier Incorporated. [Cl. 144-208]

A method and an apparatus for barking logs are described in which high-velocity water jets cut through and remove the bark from the log without removing any of the wood. Oscillating water jets strike the advancing log at an angle of 45° with its axis, under a nozzle pressure of 1100 p.s.i.

E.G.S.

BLACK LIQUOR

SMEDSLUND, TOR H. Method for the production of dimethylsulphoxide. Canadian patent 463,502. Filed Oct. 23, 1945. Issued March 7, 1950. 2 claims. Assigned to Aktiebolaget Centrallaboratorium.

Kraft black liquor is subjected to pressure heating and/or dry distillation; the resulting highly volatile products are fractionated to obtain dimethyl sulfide, which is oxidized in the presence of air and oxygen-producing nitrogen oxides to dimethyl sulfoxide. E.G.S.

BOARD

EVANS, RAYMOND N. Lignin resins and process of making same. U. S. patent 2,501,666. Filed Aug. 29, 1946. Issued March 28,

1950. 4 claims. Assigned to Masonite Corporation. [Cl. 260-17.5; changed to 260-9]

Forty-five parts of an ethyl alcohol-ethyl acetate resin solution (containing 41% solids) are added to 90 parts of an acid-hydrolyzed lignocellulose fiber stock at 3% consistency. The stock is formed into a sheet product, cold squeezed, dried overnight at 40° C. in a current of air, and then heated for 1.5 hours at 125°. The volatile products are less than 1%. A hardboard product is prepared by pressing the sheet at 1750 p.s.i. and 165° for five minutes and chilling under pressure. E.G.S.

BOARD, INSULATING

KUNZ, BERNARD P. Corrugated structure. U. S. patent 2,501,180. Filed April 1, 1946. Issued March 21, 1950. 3 claims. [Cl. 154-55]

A series of corrugated sheets are glued together to form a structure which will withstand large compressive loads. E.G.S.

BOARD, LAMINATED

LIEB, DAVID J., CLARK, LAURENCE E., JR., and SPAHR, RAYMOND J. Synthetic resin compositions employing curing catalysts. U. S. patent 2,489,145. Filed Jan. 18, 1947. Issued Nov. 22, 1949. 1 claim. Assigned to The Borden Company. [Cl. 260-71]

A laminating composition for paper, textiles, and plywood is prepared by the combination of an organo-boron trifluoride complex curing catalyst with a hardenable urea-formaldehyde condensate; the catalyst is formed by the addition of boron trifluoride to phenol. E.G.S.

BOARD SPECIALTIES

FOX, FRED L. Record carrier. U. S. patent 2,501,037. Filed Dec. 13, 1946. Issued March 21, 1950. 1 claim. [Cl. 224-45]

The body of a cardboard phonograph record carrier is folded and formed with an expansible pleat, so as to comprise two similar side wings which may be positioned parallel to each other. E.G.S.

GEORGE, WALTER C. Pallet construction. U. S. patent 2,501,506. Filed June 13, 1945. Issued March 21, 1950. 6 claims. Assigned to Gaylord Container Corporation. [Cl. 248-120]

A paperboard pallet comprises preformed upper and lower decks and preformed side and intermediate center sills. Each of the decks consists of a layer of laminated fiberboard sheets and is bent into a continuous series of V-shaped ridges. Each of the side and center sills is formed from a number of vertically arranged corrugated board strips, which are die-cut along their upper and lower edges to accept the ridges and grooves of the decks. E.G.S.

GIANNINOTO, FRANK. Container for carbon paper. U. S. patent 2,502,214. Filed Oct. 19, 1946. Issued March 28, 1950. 7 claims. Assigned to Underwood Corporation. [Cl. 206-1]

A light cardboard container comprises an envelopelike compartment for unused sheets of carbon paper and a folderlike compartment for used sheets. E.G.S.

RAMBO, FRANCIS R., and ANGELO, MICHAEL. Display apparatus. Filed Dec. 26, 1945. Issued Feb. 21, 1950. 2 claims. Assigned to Muirson Label Co., Inc. [Cl. 35-53]

A cardboard display holder for can and container labels is constructed so that a label may be inserted between a transparent cellophane window and a cardboard backing member. E.G.S.

RUFFIN, ANDREW E. Novelty box. U. S. patent 2,501,694. Filed March 28, 1947. Issued March 28, 1950. 2 claims. [Cl. 229-8]

The top and inner and outer walls of a novelty box are constructed of picture post cards. A concealed structure of frame members and stiffening bars is incorporated to lend rigidity to the box. E.G.S.

CELLULOSE ETHERS

HARVEY, MORTIMER T. Ethyl cellulose gels. U. S. patent 2,485,597. Filed Sept. 7, 1944. Issued Oct. 25, 1949. 6 claims. Assigned to Harvel Research Corporation. [Cl. 106-174]

A mixture of ethylcellulose and the "blown" product of a normally liquid unsaturated organic material (e.g., an alkyl ester of abietic acid, such as methyl or ethyl abietate; a liquid condensation reaction product of a terpene, such as turpentine, pinene, dimenthene, limonine, cedarwood oil, or cedrene, with formaldehyde in the presence of an acidic condensing agent; the liquid condensation products of a terpene alcohol, such as pine oil, terpineol, or eucalyptol, with formaldehyde in the presence of an acidic condensing agent; or the normally liquid condensation reaction products of a tertiary alcohol, such as tertiary butyl alcohol, tertiary amyl alcohol, tertiary hexyl alcohol, tertiary heptyl alcohol, or tertiary octyl alcohol, with formaldehyde in the presence of an acidic condensing agent) is heated at 250-400° F. until the mixture is converted to a solution of ethylcellulose in the blown product. The solution is allowed to cool to a gel in shallow pans at room temperature. The ratio of ethylcellulose to the blown product in the gel should be between 1: 2 and 1: 8 by weight. The resultant composition is suitable as an adhesive or as a coating and/or impregnating material for paper, fabric, wood, metal, and the like. E.G.S.

CLAY

WHITTAKER, HARRY. Treatment and purification of clay. U. S. patent 2,500,727. Filed Aug. 6, 1949. Issued March 14, 1950. 7 claims. Assigned to Georgia Kaolin Company. [Cl. 23-110; changed to 23-112]

Twenty parts by weight of a Georgia kaolin is blunged with 80 parts of water, to which is added 0.06 part of tetrasodium pyrophosphate. Grit and mica are settled out in the usual manner. The suspension is then acidified with alum and bleached with eight parts of zinc hydrosulfite per ton of kaolin. After bleaching, four parts by weight of an anion-exchange resin (American Cyanamid Co. A300, 60-mesh) are stirred into the suspension; the A300 resin is a hydroxide-activated synthetic material. The resin is separated from the suspension by passage through a 100-mesh screen. Four parts by weight of a cation-exchange resin (American Cyanamid Co. C-200) are stirred into the suspension and subsequently removed by screening; the C-200 resin is a hydrogen-activated sulfonic acid synthetic material. The treated clay slip is filter pressed and dried. The finished clay has a G.E. brightness of 87.2 and a pH of 4.5. When the same clay is bleached in the

same manner but is not treated with exchange resins, a brightness value of 84.3 is obtained. The treated crude clay has a brightness of 80.6.
E.G.S.

DISPENSING CONTAINERS

HOAG, RODERICK W. Shaker dispenser. U. S. patent 2,499,313. Filed June 22, 1945. Issued Feb. 28, 1950. 3 claims. [Cl. 206-56; changed to 229-7]

A corrugated paper package is adapted for dispensing granular or powdered material such as salt and tooth powder. E.G.S.

REID, GEORGE C., and JACOBS, SAMUEL S. Container with pouring throat and connecting dispensing opening. U. S. patent 2,499,416. Filed May 22, 1947. Issued March 7, 1950. 5 claims. Assigned to American Can Company. [Cl. 229-17]

A sanitary fiber container for milk, fruit juices, and the like incorporates a dispensing opening in its top closure. Pockets or recesses which might trap small quantities of liquid during pouring are eliminated. E.G.S.

SMITH, JESSIE M. Toilet powder dispenser. U. S. patent 2,500,500. Filed April 4, 1946. Issued March 14, 1950. 1 claim. [Cl. 15-131.1]

A crepe paper bouquet is mounted on a cylindrical dispensing container for toilet powder; it is claimed that the bouquet affords uniform distribution of the powder. E.G.S.

DRYING—PAPER

TAIT, ALEXANDER W. Method of and apparatus for controlling papermaking machines. Canadian patent 463,971. Filed July 7, 1949. Issued March 28, 1950. 9 claims.

This is the same as U. S. patent 2,479,031; *cf.* B.I.P.C. 20: 55.
E.G.S.

FOLDING BOXES

CARTWRIGHT, ROBERT B. Container. U. S. patent 2,501,842. Filed Jan. 12, 1948. Issued March 28, 1950. 14 claims. [Cl. 229-17]

A paper container for holding and dispensing dry flowable materials such as cereals is formed from an integral blank and is provided with a pouring spout on one of the walls. E.G.S.

RINGLER, WILLIAM A. Means for effecting hermetic closures in cartons and containers. U. S. patent 2,501,852. Filed May 8, 1944. Issued March 28, 1950. 6 claims. Assigned to Gardner Board and Carton Co. [Cl. 229-37]

A seam construction for heat-sealed cartons is described in which the flaps are marked with single or multiple scores to soften them, increase their thickness, and make them easier to compress into a surface-conformed condition. E.G.S.

ROTTMAN, GEORGE. Carton. U. S. patent 2,499,780. Filed Sept. 5, 1945. Issued March 7, 1950. 1 claim. [Cl. 229-41; changed to 229-31]

A cardboard hatbox incorporates a dustproof closure between the body of the carton and the cover. E.G.S.

SPECKMAN, SAMUEL S., and YOSS, MURRAY. Pocket-size tissue container. U. S. patent 2,501,357. Filed Jan. 24, 1947. Issued March 21, 1950. 2 claims. [Cl. 206-57]

A pocket-size container for folded sheets of facial tissue is described. E.G.S.

ZINN, JULIUS A., JR. Carton. U. S. reissue patent 23,204. Filed Nov. 3, 1949. Issued March 7, 1950. 15 claims. [Cl. 229-14; changed to 229-37]

This is a reissue of U. S. patent 2,464,065; *cf.* B.I.P.C. 19: 598. E.G.S.

FOLDING BOXES, SIFTPROOF

FARRELL, ROBERT A. Leakproof package and method of making same. U. S. patent 2,496,043. Filed July 26, 1946. Issued Jan. 31, 1950. 13 claims. Assigned to Marathon Corporation. [Cl. 229-5.5]

The open ends of a tubular leakproof package are sealed with a flexible closure membrane or sheet material. As an example, the membrane may be formed of a 25-lb. basis weight wet-strength bleached kraft coated on one face with a 20-lb. basis weight composition consisting of 85% by weight of microcrystalline wax and 15% by weight of isobutylene polymer and having a viscosity when applied of not less than 10,000 centipoises at 90° C. E.G.S.

GREEN LIQUOR

KAHN, JAMES M., and SCHILF, JOHN J. Treatment of green liquor. Canadian patent 463,693. Filed April 13, 1946. Issued March 14, 1950. 12 claims. Assigned to Infilco Incorporated.

Kraft green liquor is clarified by the addition of an inorganic magnesium compound; a precipitate of magnesium hydroxide is formed and is separated from the treated liquor. E.G.S.

INORGANIC PAPER

WALTERS, THEODORE R. Insulating paper of asbestos and bentonite. U. S. patent 2,493,604. Filed Nov. 6, 1944. Issued Jan. 3, 1950. 2 claims. Assigned to General Electric Company. [Cl. 92-3]

A thin, flexible, inorganic insulating paper consists of 5-35 parts by weight of bentonite and 65-95 parts by weight of asbestos fibers which are devoid of soluble impurities and conducting particles, and which have a maximum diameter of 0.02 mil. The bentonite is modified by treatment in a copper acetate solution, so that the particles agglomerate upon and adhere to the asbestos fibers. The paper product is sufficiently strong and flexible to be folded upon itself without breakage and to be wrapped around electrical conductors. E.G.S.

INTERIOR PACKING

HOBLICK, BENJAMIN M. Ventilated fruit cushion. U. S. patent 2,500,412. Filed March 27, 1948. Issued March 14, 1950. 4 claims. Assigned to Blake, Moffitt & Towne. [Cl. 217-3]

A ventilated cushion which is designed for use in fruit crates comprises a rectangular pad of a shredded, loosely packed material such as excelsior. The pad is enclosed in a perforated paper envelope; the perforations permit a uniform ventilation of the fruit. E.G.S.

LARSEN, SPENCER A. Package. Canadian patent 463,748. Filed July 11, 1947. Issued March 14, 1950. 1 claim. Assigned to Wingfoot Corporation; U. S. patent 2,501,570. Filed Aug. 27, 1946. Issued March 21, 1950. 1 claim. [Cl. 206-46]

A package for the shipment of soft, perishable, or fragile articles (e.g., fruit, eggs, glassware, and the like) incorporates a hammocklike construction to avoid the transmission of external shocks to the contents. The package comprises an outer, multicompartment, cardboard or corrugated board container and an inner hammock formed from a rubber hydrochloride film. E.G.S.

LIGNIN

EVANS, RAYMOND N., and INGRASSIA, ANGELO P. Lignin resins and process of making same. U. S. patent 2,501,665. Filed May 24, 1946. Issued March 28, 1950. 6 claims. Assigned to Masonite Corporation. [Cl. 260-17.3]

A resin solution is made by adding 212 parts of methyl Cellosolve to 150 parts of a melamine-formaldehyde condensation product; 0.3 part of diammonium hydrogen phosphate catalyst is added to the solution. Sixty-three parts by weight of a bonedry, acid-hydrolyzed lignocellulose fiber mat are impregnated with 113 parts of the prepared resin solution. The resin-fiber combination is heated for 4.5 hours in a vacuum oven at 60° C. After removal from the oven, the impregnated mat is ground in a Wiley mill to pass a 40-mesh screen. A molded specimen is prepared by pressing the material in a heated press under a pressure of 1750 p.s.i. at 165° C. for five minutes and chilling while under pressure; the molded specimen has the following properties: specific gravity, 1.40; modulus of rupture, 13,040 p.s.i.; Rockwell M hardness at 20° C., 104, and at 105° C., 75; water immersion, 24 hours, 1.4% uptake; 1% alkali immersion, 24 hours, 1.3% uptake; and color of alkali solution, clear. The described resin solution is also effective as a laminating absorptive in the lamination of paper, hardboard, and plywood. E.G.S.

FARBER, EDUARD. Process of treating lignin residues. Canadian patent 463,740. Filed April 30, 1946. Issued March 14, 1950. 14 claims. Assigned to Timber Engineering Company.

This corresponds to U. S. patent 2,453,213; *cf.* B.I.P.C. 19: 289-90. E.G.S.

IRWIN, JESSE M. Process of producing a molding powder. U. S. patent 2,486,601. Filed April 27, 1946. Issued Nov. 1, 1949. 5 claims. [Cl. 106-163]

A process is described for the production of a molding powder from a lignocellulosic material such as wood, bagasse, straw, corncobs, or cornstalks. As an example, hardwood is placed in a digester with sulfur (one pound per 40 pounds of wood) and water (two pounds per pound of wood). The digester is heated to a steam pressure of 150-200 p.s.i. and a temperature of 388° F., held for five minutes, and relieved. The steam pressure is then restored to 200 p.s.i. and held for 20 minutes. The material is re-

moved from the digester, dried, and ground to pass a 40-mesh screen. The resultant powder is molded at a pressure of 4000 p.s.i. and a temperature of 300° F. for five minutes to yield a dark brown to black product, which exhibits high strength and has a density of 1.44. E.G.S.

MACHINERY—BOARD MACHINES

BERNARD, WILLIAM, and BERNARD, JOSEPH. Apparatus for manufacturing cement-asbestos board. U. S. patent 2,500,923. Filed June 6, 1946. Issued March 21, 1950. 2 claims. Assigned to American Asbestos Industries, Inc. [Cl. 92-43; changed to 92-38]

A machine is described for the manufacture of cement-asbestos board such as is used in the fabrication of shingles. The usual boardmaking equipment is modified so that no asbestos or cement is carried off with the waste water, and no slurry is spilled over the sides of the molding vat; it is claimed that a saveall is unnecessary. E.G.S.

MACHINERY—CONSISTENCY REGULATORS

BOWEN, ROBERT E. Stock controller. U. S. patent 2,498,876. Filed Jan. 26, 1946. Issued Feb. 28, 1950. 12 claims. Assigned to North Carolina Pulp Company. [Cl. 137-78]

A stock controller is designed to accept stock at any consistency between the lowest practical consistency and any higher consistency that can be pumped, and either remove or add water automatically in order to provide a uniform flow of stock at a uniform consistency. E.G.S.

MACHINERY—CONVERTING MACHINERY

ANDERSON, HELMER. Method and apparatus for lining blanks. U. S. patent 2,502,117. Filed March 17, 1948. Issued March 28, 1950. 20 claims. Assigned to General Mills, Inc. [Cl. 93-36.01]

A method and an apparatus are described for feeding box blanks in spaced relation, applying a continuous strip of lining material to the series of spaced blanks, cutting the lining material between the blanks, and then slitting the lining material to correspond to the slots in the blanks. 31 figures. E.G.S.

BERCH, SAMUEL H. Container flap folding apparatus. U. S. patent 2,500,922. Filed Nov. 28, 1945. Issued March 21, 1950. 3 claims. [Cl. 93-36.8]

A machine for packaging ice cream incorporates means for withdrawing a carton blank from a magazine and transferring it to a forming die; the folded carton is subsequently passed to filling and closing stations. E.G.S.

CHRISTIANSEN, CHRISTIAN. Box sealing machine. U. S. patent 2,499,461. Filed April 23, 1943. Issued March 7, 1950. 11 claims. [Cl. 93-36.3]

A machine is designed for pressing or sealing the glued ends of cardboard shoebox blanks to the infolded side tabs of the blanks to form boxes and box covers. E.G.S.

CONSER, HUGH F. Carton feeding mechanism. U. S. patent 2,500,804. Filed Jan. 5, 1946. Issued March 14, 1950. 2 claims.

Assigned to Shedd-Bartush Foods, Inc. [Cl. 271-1; changed to 93-53]

A mechanism is provided for feeding flat articles, such as flat, folded box blanks, from a stack of such articles in a magazine; the device is also effective in opening or squaring the blanks as they are delivered from the magazine. E.G.S.

FRIEL, HAROLD C. Apparatus for manufacture of stereotype dry mats and similar multilayer sheet materials. U. S. patent 2,501,716. Filed July 5, 1946. Issued March 28, 1950. 3 claims. [Cl. 92-43]

An apparatus is provided for the continuous production of matrix paper and similar dense multilayer materials which are made from highly hydrated, very slow pulp stock. The equipment is particularly applicable for the manufacture of high-grade fiberboard, pressboard, index board, electrical pressboard, counter board, and the like. E.G.S.

HEYMAN, ALBERT A. Machine for manufacturing spirally wound straws or tubes. U. S. patent 2,501,938. Filed Jan. 24, 1947. Issued March 28, 1950. 6 claims. Assigned to Joseph Shapiro. [Cl. 93-80]

This corresponds to Canadian patent 452,737; *cf.* B.I.P.C. 19: 290. E.G.S.

LEASK, JOHN A. T. Carton assembling machine. U. S. patent 2,499,960. Filed Aug. 27, 1945. Issued March 7, 1950. 2 claims. [Cl. 93-36.3]

A machine is adapted to hold a hand-assembled carton during the gluing and drying operations; a clamping device insures even pressure throughout the entire base area of the carton. E.G.S.

RATHKE, HARRY C. Machine for applying a liquid coating. U. S. patent 2,500,569. Filed Jan. 3, 1947. Issued March 14, 1950. 1 claim. Assigned to The Meyercord Company. [Cl. 91-51]

A machine is provided for the application of an even, solid coating of a liquid adhesive material to the decalcomania side of a decalcomania-bearing strip or sheet. E.G.S.

MACHINERY—CONVEYORS

STENGER, RICHARD C. Conveying and positioning mechanism for cartons and the like. U. S. patent 2,499,694. Filed Jan. 10, 1949. Issued March 7, 1950. 8 claims. Assigned to Sutherland Paper Company. [Cl. 198-31]

A conveyor mechanism for positioning and delivering cartons is adapted to deliver the cartons in two spaced rows; relatively light cartons may be handled without deforming or disengaging the walls of the erected cartons. E.G.S.

MACHINERY—CORRUGATING MACHINE

CONNER, WILLIAM S. Machine for making corrugated paperboard. U. S. patent 2,499,267. Filed Sept. 11, 1945. Issued Feb. 28, 1950. 5 claims. [Cl. 154-30]

In the manufacture of corrugated paperboard, air or steam jets are directed into the corrugating pass and against the freshly corrugated paper;

the jets serve to strip the corrugated paper from one roll and to cause it to press against and follow a second roll. The use of mechanical stripping fingers is eliminated. E.G.S.

MACHINERY—CUTTERS

VICK, EDWARD H. Apparatus for the manufacture of fibre board and the like. Canadian patent 463,532. Filed July 4, 1947. Issued March 7, 1950. 5 claims. Assigned to E. A. Chamberlain Limited.

An apparatus is provided for automatically severing a layer of felted fibers on a making roll in a boardmaking machine. A spring-loaded blade is housed in a recess in the surface of the making roll; the blade is normally restrained against outward movement. A device which is responsive to a predetermined increase in thickness of the felted fiber layer renders the blade-restraining means inoperative. E.G.S.

MACHINERY—DRIVE, ELECTRIC

GOODWILLIE, JOHN E., and BEACHLER, EDWARD D. Motor drive for paper making machines. Canadian patent 463,824. Filed June 17, 1946. Issued March 21, 1950. 9 claims. Assigned to Beloit Iron Works.

This is the same as U. S. patent 2,487,702; *cf.* B.I.P.C. 20: 287. E.G.S.

MACHINERY—FOLDING MACHINE

DELOYE, JAMES J. Interfolding machine. U. S. patent 2,468,254. Filed Feb. 16, 1945. Issued April 26, 1949. 2 claims. Assigned to International Cellucotton Products Company. [Cl. 270-73]

A machine is provided for folding and interfolding lightweight, flimsy, bodiless sheets, such as facial tissues, without pulling or tearing the sheets out of shape. E.G.S.

MACHINERY—MIXING APPARATUS

MILLER, EMERY P. Method and apparatus for forming fibrous webs. U. S. patent 2,466,906. Filed Nov. 23, 1946. Issued April 12, 1949. 13 claims. Assigned to Ransburg Electro-Coating Corp. [Cl. 154-1]

In the manufacture of a fibrous matting, the fibrous material (e.g., wood fibers) is mixed electrostatically with the binder material. The fiber particles are charged electrically with one polarity, and the binder particles are given the opposite charge. The positively and negatively charged particles are blown in separate streams into a mixing chamber in such a manner that the negatively charged particles travel between the positively charged particles and the negatively charged chamber walls. This arrangement results in a more thorough, uniform mixing, since mixing is promoted not only by the force of the gas streams and by the opposite charges on the particles, but also by the relation of the two gas streams to the walls of the mixing chamber. E.G.S.

MACHINERY—PACKAGING MACHINERY

BINSACK, JOSEPH W. Detector for carton closing machines. U. S. patent 2,499,564. Filed Dec. 13, 1945. Issued March 7, 1950. 6 claims. Assigned to Beech-Nut Packing Company. [Cl. 192-125]

A mechanism is provided for use with carton-closing and sealing machines; the device is designed to stop the machine or the feeding of the cartons in the event that a carton has not been properly closed or sealed. E.G.S.

FRANCO, SALVATORE A. Straw packaging machine. Canadian patent 463,837. Filed Oct. 31, 1947. Issued March 21, 1950. 6 claims. Assigned to Diamond Straw & Machine Corporation.

A machine for packaging drinking straws includes means for sliding the straws into individual tubular paper wrappers. E.G.S.

GILBERT, JOSEPH A. Wrapping machinery. Canadian patent 463,900. Filed Oct. 1, 1946. Issued March 21, 1950. 14 claims. Assigned to Rose Brothers (Gainsborough) Limited.

This is the same as U. S. patent 2,492,567; *cf.* B.I.P.C. 20: 368. E.G.S.

GILOWITZ, BENJAMIN. Bag stacking and bundling machine. U. S. patent 2,502,374. Filed Nov. 2, 1948. Issued March 28, 1950. 4 claims. Assigned one half to Albert Friedberg. [Cl. 93-93]

A machine is provided for stacking and bundling bags or similar articles; the apparatus is adapted for use in conjunction with a bag-making machine of any suitable type, such as those used in the manufacture of cellophane or aluminum foil bags. E.G.S.

PETERSON, WILLIAM R. Bag support for filling machines. U. S. patent 2,500,768. Filed Feb. 11, 1946. Issued March 14, 1950. 7 claims. Assigned to St. Regis Paper Company. [Cl. 226-48]

A bag support for an automatic filling machine is mounted on a vertical screw which may be rotated in either direction to elevate or lower the support; in this manner, bags of various lengths may be accommodated. E.G.S.

PETERSON, WILLIAM R. Gate arrangement for controlling the passage of material into bags. U. S. patent 2,500,769. Filed Feb. 11, 1946. Issued March 14, 1950. 6 claims. Assigned to St. Regis Paper Company. [Cl. 226-48]

The feed gate of a bag-filling machine is constructed so that the usual objectionable binding action of the material (e.g., cement) on the gate is avoided, with the result that the slide or gate may be freely opened and closed. E.G.S.

SALFISBERG, LEROY L. Package crimping machine. U. S. patent 2,500,874. Filed April 23, 1945. Issued March 14, 1950. 6 claims. Assigned to Seal-Craft, Incorporated. [Cl. 154-42]

A machine is adapted for the crimping and sealing of packages of aspirin, vitamin tablets, and the like. E.G.S.

SHERWOOD, ALBERT L. Carton packing device. Canadian patent 464,090. Filed Aug. 9, 1947. Issued March 28, 1950. 10 claims. Assigned to Sutherland Paper Company.

This is the same as U. S. patent 2,431,775; *cf.* B.I.P.C. 18: 341.
E.G.S.

MACHINERY—PRESSES

HORNBOSTEL, LLOYD. Paper machine. Canadian patent 463,999. Filed Dec. 17, 1947. Issued March 28, 1950. 12 claims. Assigned to Beloit Iron Works.

A paper machine incorporates a press section for receiving and pressing a wet web; the section comprises a horizontal press, a reverse press, and co-operating upper and lower felts. E.G.S.

MACHINERY—ROLL STANDS

BENJAMIN, FRED H. Web roll support for corrugated paperboard machines. U. S. patent 2,501,985. Filed July 2, 1947. Issued March 28, 1950. 11 claims. Assigned to F. J. Kress Box Company. [Cl. 242-58]

A web roll support for a corrugated paperboard machine can be loaded in the aisle beside the machine and then moved into position under or at one end of the machine; the support can be loaded by a standard traveling overhead hoist. E.G.S.

MACHINERY—SCREENS

RANTANIEMI, VÄINÖ V. Arrangement for sorting paper-pulp and similar suspended matters. U. S. patent 2,501,916. Filed Feb. 2, 1945. Issued March 28, 1950. 3 claims. Assigned to Tammerfors Linne- och Jern-Manufaktur Aktiebolag. [Cl. 92-29; changed to 92-35]

This corresponds to Canadian patent 446,797; *cf.* B.I.P.C. 18: 487.
E.G.S.

MACHINERY—SHEET-FEEDING MECHANISM

HARVEY, LEO M. Strip feed mechanism for paper cup making machines or the like. U. S. patent 2,500,408. Filed March 28, 1944. Issued March 14, 1950. 8 claims. [Cl. 93-60]

A paper feed mechanism for a paper cup machine can be adjusted to increase or shorten the length of paper advanced for each operation of the machine; the mechanism can also be adjusted to handle paper strips of various widths. E.G.S.

MACHINERY—SLITTERS AND WINDERS

STONE, WILLIAM E. Paper winding machine. U. S. patent 2,498,224. Filed Aug. 3, 1946. Issued Feb. 21, 1950. 4 claims. Assigned to Rice Barton Corporation. [Cl. 242-65]

A "Pope reel" paper-winding machine incorporates means for maintaining a constant nip-pressure between a driving drum and a winding roll as the paper is wound onto the winding roll. E.G.S.

MACHINERY—THICKENERS

BREYFOGLE, ROY H. Apparatus for dewatering paper stock. Canadian patent 463,622. Filed April 29, 1949. Issued March 14, 1950. 1 claim.

This is the same as U. S. patent 2,476,131; *cf.* B.I.P.C. 19: 895.
E.G.S.

PAPER—COATED

HECKEL, HERMAN C. N. Paper coating composition and coated paper. U. S. patent 2,498,207. Filed Sept. 6, 1945. Issued Feb. 21, 1950. 2 claims. Assigned to The Champion Paper & Fibre Company. [Cl. 106-163; changed to 106-203]

A coating composition which is suitable for the manufacture of coated printing paper consists of a fluent, easily spreadable aqueous dispersion of 100 parts of mineral pigment, and 8-30 parts of an adhesive containing oxidized cellulose. The oxidized cellulose is prepared by treating cellulose with nitrogen peroxide until the product has a carboxyl content of 7-16% and then dissolving in alkali. The aqueous coating composition has a solids content of about 50%. E.G.S.

MURPHY, CLYDE G., and SERMATTEI, JOHN P. Decorative protective coating composition. U. S. patent 2,492,760. Filed Aug. 13, 1947. Issued Dec. 27, 1949. 7 claims. Assigned to E. I. du Pont de Nemours & Company. [Cl. 260-27]

As an example, a paper-coating composition comprises 5.1% of an ethylene-vinyl acetate copolymer (3:1), 51.3% coumarone indene resin (m.p. 150° C.), 38.4% toluene, and 5.2% xylene. A paper coated with this material exhibits a gloss which approaches that of laminated cellulose acetate; the coating is nontacky and odorless. E.G.S.

SCOTT, MILTON J. Nitroalcohol modified aminoplasts. U. S. patent 2,484,315. Filed Sept. 25, 1945. Issued Oct. 11, 1949. 1 claim. Assigned to Monsanto Chemical Company. [Cl. 260-67.6]

A suspension of 206 parts of crystalline hexamethylolmelamine in a mixture of 1200 parts of 2-nitro-2-methyl-1-propanol and 2 parts of hydrochloric acid is refluxed at atmospheric pressure for one hour. The crystalline hexamethylolmelamine dissolves under reflux, and a clear, slightly yellow solution of a modified methylolmelamine in 2-nitro-2-methyl-1-propanol is obtained. The resinous product is recovered from solution by the vacuum distillation of the solvent. The resin is soluble in alcohols, esters, and common lacquer solvents, and is suitable for the coating of paper, textiles, wood, glass, metal, and the like. E.G.S.

WILSON, ALFRED D. Production of clay coated sheet material. U. S. patent 2,500,972. Filed Feb. 14, 1945. Issued March 21, 1950. 5 claims. Assigned to S. D. Warren Company. [Cl. 106-148]

The preparation of a paper coating composition is described. Coarse material is removed by settling from a deflocculated suspension of Georgia clay; the suspension is then flocculated by the addition of alum and filtered on a filter press. The filter cake contains 71% solids; 0.8% of sodium pyrophosphate (based on the dry weight of the clay in the cake) is added to the filter cake, together with sufficient water to reduce the solids content to 62%. The deflocculated slurry is evaporated to a solids content of 90%, at which point the clay appears dry; the dried clay is again reduced to 62% solids by the addition of water. The resultant slurry is mixed with casein to form a coating composition. It is claimed that a decrease in the casein requirement is realized through the incorporation of the evaporation process. E.G.S.

PAPER SIZING

CASSADAY, JACK T. Stabilized rosin size composition. Canadian patent 463,653. Filed July 24, 1941. Issued March 14, 1950. 3 claims. Assigned to American Cyanamid Company.

A dry wood rosin size is stabilized against oxidation by the addition of 0.2-3.0% of methyl aniline (based on the total rosin content). E.G.S.

HAMPTON, BURT L. Refined rosin products and processes. U. S. patent 2,497,882. Filed Feb. 23, 1946. Issued Feb. 21, 1950. 9 claims. Assigned to The Glidden Company. [Cl. 260-105]

A process is described for imparting an increased resistance to yellowing to rosin soaps and sizes. The rosin material is heated at 200-375° C. under nonoxidizing conditions with 0.5-5% (sulfur equivalent) of a catalytic material selected from the group consisting of sulfur, sulfur halides, alkali metal sulfides, and alkali metal polysulfides, in the presence of up to 38% of the stoichiometric quantity of sodium hydroxide required to neutralize the rosin material. Heating is prolonged sufficiently to decrease the degree of unsaturation without aromatization of more than one ring of the rosin material. The volatile reaction products are removed from the treated rosin material while in the liquid phase. E.G.S.

LIGHT, DONALD W., and MORGAN, RUSSELL L. Rosin size composition and method of preparing same. Canadian patent 463,652. Filed July 8, 1941. Issued March 14, 1950. 14 claims. Assigned to American Cyanamid Company.

An autodispersible rosin composition is prepared by stirring a sodium hydroxide solution into molten rosin and then adding a small amount of ethanol and an alkaline solution containing 5-35% of soybean protein; a dispersion of the soybean protein solution in rosin is obtained. The addition of protein solution is continued until the product contains 65-95% total solids; the rosin should remain as the dispersion phase. E.G.S.

PAPER SPECIALTIES

BAXTER, THOMAS R. Infusion package and method of making same. U. S. patent 2,498,197. Filed Jan. 9, 1948. Issued Feb. 21, 1950. 10 claims. Assigned to Standard Brands Incorporated. [Cl. 99-77.1]

An infusion package is constructed of a standard or semistandard lightweight filter paper which has been overprinted with a network of lacquer in order to impart strength and elasticity to the paper. E.G.S.

CRARY, JAY D. Paper strap. U. S. patent 2,499,463. Filed Feb. 12, 1946. Issued March 7, 1950. 1 claim. Assigned to Paper Strap, Inc. [Cl. 229-52; changed to 154-53.6]

This corresponds to Canadian patent 457,266; *cf.* B.I.P.C. 19: 826. E.G.S.

HALLEY, CLAIRE H. Beauty mitt. U. S. patent 2,501,565. Filed Nov. 14, 1946. Issued March 21, 1950. 2 claims. [Cl. 128-165; changed to 128-268]

This invention comprises an outer grease-impervious mitt of oiled silk

or the like, and an inner absorbent-paper mitt which is impregnated with a suitable skin cream such as lanolin and lemon oil. The mitt is designed to prevent the cream from rubbing off on clothing or bedding. E.G.S.

HAMM, HOMER A. Pot holder. U. S. patent 2,501,815. Filed Aug. 10, 1946. Issued March 28, 1950. 5 claims. [Cl. 16-116]

A pot holder is formed from at least four layers of a paper which has been creped in two directions; the layers are glued or stitched together. E.G.S.

HICKERNELL, LATIMER F. Electrical cable. U. S. patent 2,498,494. Filed June 22, 1945. Issued Feb. 21, 1950. 2 claims. Assigned to Anaconda Wire and Cable Company. [Cl. 174-26]

Each conductor of a high-voltage, three-phase power transmission cable is covered with a helical wrapping of plain carbon black-impregnated paper and several wrappings of ordinary insulating paper. Each layer of insulating paper is surrounded with a helical wrapping of a composite tape which comprises paper impregnated with carbon black and bonded to an aluminum foil with a low-resistance adhesive. The three insulated conductors are covered with an extruded lead sheath. E.G.S.

HICKERNELL, LATIMER F. Electrically conducting composite sheet. U. S. patent 2,498,493. Filed June 22, 1945. Issued Feb. 21, 1950. 1 claim. Assigned to Anaconda Wire and Cable Company. [Cl. 174-126]

A current-conducting adhesive is prepared from 10 parts of polyvinyl acetate, 30 parts of methyl ethyl ketone, 5 parts of tricresyl phosphate, and 5 parts of channel black. The mixture is ground to a smooth paste and spread on carbon black paper; an aluminum foil is then pressed over the adhesive. The composite sheet material may be used as a wrapping over an oil-impregnated insulation, for the purpose of adsorbing impurities from the oil and providing electrical conductivity through the sheet. E.G.S.

HILL, ALVIN. Sanitary pillowslip and sweat guard therefor. U. S. patent 2,500,250. Filed July 25, 1947. Issued March 14, 1950. 4 claims. Assigned 49% to M. Langway and W. M. Bonds. [Cl. 5-339]

A sanitary pillowslip has a cardboard base member upon which are mounted several sheets of a thin, flexible, waterproof paper. A plastic sweat guard is inserted between the outer paper sheet and the rest of the sheets. A soiled sheet is removed by tearing along perforated lines. E.G.S.

KREBS, CHARLES H. Single closure for bottles. U. S. patent 2,501,849. Filed May 22, 1947. Issued March 28, 1950. 7 claims. Assigned to Standard Cap and Seal Corporation. [Cl. 215-38]

A milk bottle cap consists of two layers of paper which are coated with a water-insoluble material (e.g., a mixture of microcrystalline wax and hydrogenated rosin), and a layer of aluminum foil which is pressed between the layers of paper. The aluminum foil acts as a barrier between the layers of water-insoluble material. The closure seals the bottle and at the same time permits the relief of any gas or air pressure which may develop within the bottle. E.G.S.

McMILLAN, HAROLD. Carrying device. U. S. patent 2,500,848. Filed Sept. 18, 1946. Issued March 14, 1950. 2 claims. Assigned to Cohoes Envelope Company, Inc. [Cl. 229-54]

A bellows-type paper carrying bag is provided with an integral, reinforced handle. E.G.S.

MEIGS, RETURN J. Electrosensitive stencil blank. U. S. patent 2,500,617. Filed Aug. 4, 1942. Issued March 14, 1950. 1 claim. Assigned to The Western Union Telegraph Company. [Cl. 117-35.5]

An electrosensitive stencil sheet comprises a sheet of long-fiber yoshino paper impregnated with a soft, stencil-forming, waxy material such as paraffin or diglycol stearate, cellulose acetate or nitrate, ethylcellulose, shellac, rosin, ester gum, cumar, dammar, starch, gelatin, pectin, or gum tragacanth. The impregnation is plasticized with a suitable high-boiling compound such as triphenyl phosphate, triacetin, castor oil, or tricresyl phosphate. The impregnating materials are mixed with an electrically conductive substance such as finely divided carbon particles or a metal powder; sufficient conductive material is added to render the impregnation and the paper base electrically conductive. The stencil sheet is used in conjunction with a scanning electrode or stylus, and a backing platen; the marking currents from the stylus readily pass through the stencil sheet to the supporting platen without injuring the paper fibers. E.G.S.

PETERSON, WILLARD D. Photographic diazo-sensitized glassine paper. U. S. patent 2,501,874. Filed June 12, 1946. Issued March 28, 1950. 2 claims. Assigned to General Aniline & Film Corporation. [Cl. 95-8]

A glassine paper (basis weight, 25 pounds [24 × 36—500]) is utilized as the base for a photographic diazotype material. An organic film-forming material (e.g., polystyrene, polyacrylic acid esters, alkyd resins, or the like) is incorporated in the coating composition to increase the strength of the base. E.G.S.

SHRONTZ, DON C. Therapeutic product. U. S. patent 2,501,544. Filed Oct. 23, 1946. Issued March 21, 1950. 4 claims. Assigned to Shellmar Products Corporation. [Cl. 128-268]

A dental poultice is packaged between a web of coated, moistureproof cellophane and a web of a coated, porous paper; the paper coating material is of a type which will heat seal to the coated cellophane. E.G.S.

SOWA, FRANK J. Laminated products and process for producing the same. U. S. patent 2,502,286. Filed July 25, 1945. Issued March 28, 1950. 2 claims. [Cl. 154-140]

A mixture of amylsilanetriol and polyamylsiloxane is heated to 180° C. to polymerize the material to a thermoplastic solid; after neutralization the solid is plasticized with 10% of liquid polydiethylsiloxane and the mixture is dissolved in ethyl acetate. The resultant composition is applied to sheets of asbestos paper, and the superimposed sheets are heated to 200° for 20 minutes under a pressure of 15,000 p.s.i. to cure the resin and form a flexible heat-resistant laminate. E.G.S.

TRASKA, WILLIAM. Receptacle. U. S. patent 2,499,799. Filed Aug. 1, 1945. Issued March 7, 1950. 2 claims. Assigned to Electrolux Corporation. [Cl. 183-51; changed to 229-62]

A disposable, self-closing, porous paper dust bag is adapted for use with vacuum cleaners. E.G.S.

TYRRELL, WALLACE B., JR. Dress shield. Canadian patent 463,804. Filed Feb. 22, 1947. Issued March 21, 1950. 11 claims.

A disposable dress shield comprises a stitched multi-ply pad of tissue paper with registering arcuate margins. E.G.S.

WALKER, CHARLES R. Indented paper manufacture. U. S. patent 2,502,112. Filed Dec. 5, 1945. Issued March 28, 1950. 8 claims. Assigned to The Fox Paper Company. [Cl. 154-33.05]

A multiple thickness padding of indented paper is formed by the passage of a set of webs through a single pair of indenting rolls; in order to avoid the nesting of the indented webs, the alternate webs are punched out, and the resultant tongues are laid back on both faces of the webs. In this way the reeling of an already indented web is not required, and the webs can be furnished continuously to a wrapping machine, which wraps the set of webs into a continuous pad which can be cut into lengths as desired. E.G.S.

WALKER, CHARLES R. Indented paper pad. U. S. patent 2,502,113. Filed March 5, 1947. Issued March 28, 1950. 4 claims. Assigned to The Fox Paper Company. [Cl. 154-54]

A cushioning paper pad comprises at least three layers of identically indented paper webs; tongues are cut in at least one of the pads and folded to overlie the indentations, thus providing a spacer to prevent nesting. E.G.S.

WALKER, CHARLES R. Method of forming plural ply indented paper pads. U. S. patent 2,502,111. Filed Dec. 5, 1945. Issued March 28, 1950. 7 claims. Assigned to The Fox Paper Company. [Cl. 154-33.05]

A method is described for the manufacture of multi-ply indented paper pads. At least three webs of indented paper are supplied continuously to a wrapping machine; the inner web is nonnesting with the two outer webs, which are directed into the wrapping machine over and under the supply for the inner web. At least one of the inner and outer webs is indented continuously as it is supplied. The indented pads are suitable for use as furniture-protecting pads. E.G.S.

WORDEN, R B. Package for fishlines. U. S. patent 2,500,446. Filed March 7, 1947. Issued March 14, 1950. 2 claims. [Cl. 206-59]

A fishing line package comprises several spaced coils formed from a single continuous line; each coil is placed in a separate square paper envelope and may be separated from the other coils without disturbing them. E.G.S.

PEAT

LEIDELMEYER, EMILE A. Process for the production of felt cardboard construction plates and other moulded materials from peat

moss or peat. Canadian patent 463,937. Filed Oct. 29, 1947. Issued March 21, 1950. 7 claims. Assigned to Hendrik J. Visscher and Jacob Visscher.

A process is described for the production of a felt cardboard from peat or peat moss. The dry peat is cleaned mechanically to produce a fibrous material; the cleaned fibers are boiled in an open 3-6% lye bath for about one hour; the treated mixture is then worked up to cardboard. E.G.S.

PLASTICS—PAPER-BASE

RYAN, PATRICK P. Insulated drip baffle. U. S. patent 2,501,540. Filed June 3, 1947. Issued March 21, 1950. 5 claims. Assigned to St. Regis Paper Company. [Cl. 312-171]

A heat-resistant, nonblistering, laminated plastic thermal insulating baffle for a refrigerator is composed of superimposed layers of paper, which are impregnated with and consolidated by a thermosetting synthetic resin (e.g., a phenol-formaldehyde resin). One surface sheet of the laminate has a relatively high resin content and is adapted to receive a baked enamel coating; the body of the laminate and the other surface sheet have a relatively low resin content and are sufficiently porous to permit the escape of gases evolved on heating. E.G.S.

PULP WASHING

LIBBY, CLARENCE E. Washing paper pulp to remove coloring matter. U. S. patent 2,502,330. Filed March 1, 1943. Issued March 28, 1950. 8 claims. [Cl. 92-13]

A method is described for washing kraft, soda, and sulfite pulps to remove the lignin and tannin coloring matter. The pulp is washed after digestion, but before bleaching, with an aqueous solution containing a molecularly dehydrated alkali-metal phosphate (e.g., sodium hexametaphosphate, sodium tetraphosphate, sodium tripolyphosphate, or tetrasodium pyrophosphate). The washing process may be carried out in the digester without exposing the pulp to air, or it may be conducted in open washing pits or on continuous rotary filters. E.G.S.

REDWOOD

LEWIS, HARRY F. Moulding powder and process of making the same. Canadian patent 463,894. Filed May 31, 1941. Issued March 21, 1950. 7 claims. Assigned to The Pacific Lumber Company.

A process is described for the preparation of a thermosetting molding powder containing heat- and pressure-modified redwood tannin and phlobaphenes. Redwood chips or sawdust is heated in the presence of steam at 600 p.s.i. for 10-12 seconds; the redwood is disintegrated and air dried with the cooking liquor which results from the steam treatment; the resultant dried mass is mixed and ground to form a homogeneous product. E.G.S.

SEMI-CHEMICAL PULPING PROCESS

FARBER, EDUARD. Producing cellulosic pulp and fibre products. Canadian patent 463,560. Filed June 22, 1946. Issued March 7, 1950. 12 claims. Assigned to Hardwood By-Products, Inc.

A wood pulp is prepared by treating the lignin-containing material with an aqueous solution of an alkali (0.02-1.0 part/100 parts of water) and an alkaline sulfite (0.02-1.0 part/100 parts of water). When at least a portion

of the lignin has been dissolved, an acid is added to the mixture to precipitate the dissolved material. The resultant mixture is drained and the pulp is compacted. E.G.S.

SETUP BOXES

JAMES, LOUISE. Box end closure. U. S. patent 2,499,647. Filed Oct. 7, 1946. Issued March 7, 1950. 1 claim. Assigned to Huye Space Saving Box System, Inc. [Cl. 229-45]

A cardboard end closure incorporates locking means in a flange corner construction in such a manner that a smooth, unbroken exterior flange surface is achieved. The closure is especially adaptable for use in gift boxes. E.G.S.

SHIPPING CONTAINERS

BELSINGER, JACK R. Multi-compartment container. Canadian patent 463,659. Filed Aug. 16, 1947. Issued March 14, 1950. 7 claims. Assigned to Belsinger, Inc.

This is the same as U. S. patent 2,487,293; *cf.* B.I.P.C. 20: 293. E.G.S.

BELSINGER, JACK R. Sealable carton with multiply bottom. Canadian patent 463,517. Filed Aug. 16, 1947. Issued March 7, 1950. 7 claims. Assigned to Belsinger, Inc.

This is the same as U. S. patent 2,483,174; *cf.* B.I.P.C. 20: 148-9. E.G.S.

CHEYNEY, LAVERNE E., and MCCUTCHEON, ROBERT J. Container. Canadian patent 463,747. Filed Feb. 27, 1946. Issued March 14, 1950. 1 claim. Assigned to Wingfoot Corporation.

This is the same as U. S. patent 2,484,608; *cf.* B.I.P.C. 20: 224. E.G.S.

COCHRAN, JOHN W. Packaging for handled tools. U. S. patent 2,501,811. Filed Oct. 28, 1949. Issued March 28, 1950. 8 claims. Assigned to Warwood Tool Company. [Cl. 206-65]

An L- or T-shaped corrugated board shipping container is provided for handled tools such as mattocks, picks, sledges, mauls, adzes, hoes, and the like. E.G.S.

LOTH, GAYLORD. Bottom construction for paperboard containers. U. S. patent 2,502,384. Filed Sept. 4, 1948. Issued March 28, 1950. 4 claims. Assigned to Hinde & Dauch Paper Company. [Cl. 229-15; changed to 229-39]

The bottom of a paperboard container is composed of foldable sections which are integral with the upright walls of the container and which are reinforced by one or more interlocking members that bridge the abutting edges of the bottom sections to resist their separation. E.G.S.

MIDOUHAS, STEPHEN P. Container for flat articles. U. S. patent 2,501,609. Filed May 6, 1948. Issued March 21, 1950. 5 claims. Assigned to Kemline Metal Products Company. [Cl. 206-60]

A flat, heavy cardboard container incorporates corner-reinforcing brackets to protect the packaged article against side blows as well as compressive forces. E.G.S.

SHIPPING CONTAINERS—TESTING

SEARS, GEORGE R., RAE, ROBERT D., and VAN DEN AKKER, JOHANNES A. Impact and acceleration testing. U. S. patent 2,498,844. Filed Aug. 16, 1947. Issued Feb. 28, 1950. 4 claims. Assigned to The Institute of Paper Chemistry. [Cl. 73-12]

A method and apparatus are described for calibrating and testing acceleration meters, impact recorders, "G" meters, and the like; the device may also be used to subject containers and packing materials to known impact accelerations in the simulation of shipping conditions. E.G.S.

STRAW

DREYFUS, HENRY. Production of cellulose. Canadian patent 464,005. Filed Jan. 18, 1945. Issued March 28, 1950. 14 claims. Assigned to Canadian Celanese Limited.

This corresponds to U. S. patent 2,487,114; *cf.* B.I.P.C. 20: 294. E.G.S.

SULFITE WASTE LIQUOR

MAUTHE, GUSTAV, and NOERR, HERMANN. Manufacture of tanning agents. Canadian patent 464,023. Filed Nov. 14, 1947. Issued March 28, 1950. 5 claims. Assigned through the Secretary of State of Canada to Chemical Developments of Canada Limited.

Thirty-five parts of caustic soda (35° Bé.) are mixed with 188 parts of purified sulfite waste liquor (35° Bé.) and heated to 100° C. in about 1.5 hours. To this mixture there are added 25 parts of a resin prepared from 400 parts of phenol, 100 parts of grape sugar, and 20 parts of hydrochloric acid; the resin is added at about 60° C., with agitation. Aqueous sulfuric acid is added until the pH of the mixture is about 3.5. After cooling, the mixture separates into two layers. In order to facilitate the separation of the solid layer which contains the major portion of the tanning material, 20 parts of ammonium sulfate are added. The resultant product can be diluted with water and used for tanning leather, preferably at a pH of 3.5-4.5. This is the same as U. S. patent 2,184,622, which was issued Dec. 26, 1939. E.G.S.

TALL OIL

VOGEL, HENRY A., and CHRISTENSON, ROGER M. Obtaining sterols of high purity. U. S. patent 2,499,430. Filed July 30, 1947. Issued March 7, 1950. 24 claims. Assigned to Pittsburgh Plate Glass Company. [Cl. 260-397.2]

A method is described for the recovery of highly purified sterols from the unsaponifiable fraction of tall oil. A crude mixture containing 20-50% of sterol is dissolved in naphtha in the ratio of one part of crude to 3-100 parts of naphtha; the resultant solution is extracted countercurrently with furfural in a ratio of 3-40 parts per part of the crude mixture. Sterol and the polymerized rosin components are recovered from the extract or furfural phase and are recrystallized from an appropriate solvent of sterol. E.G.S.

TRANSPARENT CONTAINERS

CLUNAN, ALBERT B. Reinforced edge transparent wall container

and blank therefor. U. S. patent 2,500,484. Filed April 29, 1946. Issued March 14, 1950. 2 claims. Assigned to Wingfoot Corporation. [Cl. 206-45.34]

A transparent display container for flowers, powder puffs, and the like is stiffened with cardboard reinforcing strips; the resulting structure is self-supporting. E.G.S.

HIGH, FRED R. Package container and display stand. U. S. patent 2,498,757. Filed Oct. 7, 1949. Issued Feb. 28, 1950. 8 claims. Assigned to T. J. Holmes Co., Inc. [Cl. 206-45.19]

A display package for glass atomizers comprises a lower flanged box, an inner false bottom, and an outer stiff case-like transparent cover. Stiff transparent tubes are inserted in the base of the package to hold the atomizer bottles firmly in place. E.G.S.

WET STRENGTH

HANSEN, OTTO, and SCHEUERMANN, HANS. Paper and its production. Canadian patent 464,015. Filed Nov. 14, 1947. Issued March 28, 1950. 6 claims. Assigned through the Secretary of State of Canada to Chemical Developments of Canada Limited.

After leaving the paper machine, a finished paper web is passed through a 2% aqueous solution of the sodium salt of a wood ether, and then through a solution of an aluminum oxide sol; the concentration of the second solution is adjusted so that the wood ether is converted to its aluminum salt. The resultant paper has a high folding endurance and wet strength; it is suitable for the manufacture of waterproof bags. This is the same as U. S. patent 2,337,887, which was issued Dec. 28, 1943. E.G.S.

AUTHOR INDEX TO BOOKS

Association of Research Libraries ... 543
Björkman, A. ... 544
Clarke, I. D. ... 545
Conference on Administration of Research ... 544
Cotton, R. T. ... 543
Day, F. T. ... 544
Dean, G. A. ... 543
Fennel, D. I. ... 544
Frankenfeld, J. C. ... 543
Gesellschaft Deutscher Chemiker. *Fachgruppe Wasserchemie* ... 545
Harman, M., ed. ... 543
Hopp, H. ... 545
Hoving, V. ... 544
Husmann, W., ed. ... 545
Kungliga Tekniska Högskola ... 544
Lanz, W. ... 544
Laubi, H., ill. ... 544
Myers, C. A. ... 543
National Electronics Conference ... 543
National Planning Association. *Committee on the Causes of Industrial Peace under Collective Bargaining* 543
Pennsylvania State College. School of Engineering ... 544
Phillips, S. C., & Co. ... 545
Physical Society of London ... 544
Raper, K. B. ... 544
Rogers, J. S. ... 545
Scott Blair, G. W. ... 544
Shultz, G. P. ... 543
Sievers, A. F. ... 545
Thom, C. ... 544
Trotier, A. H., ed. ... 543
Ullman, M. B. ... 544
U. S. Bureau of the Census ... 544
U. S. Department of Agriculture 543, 545
U. S. National Bureau of Standards. *Commodity Standards Division* ... 543
Verband Schweizerischer Papier- und Papierstoff-Fabrikanten ... 543
Wangaard, F. F. ... 545

AUTHOR INDEX TO ABSTRACTS

The letter P preceding a page number indicates a patent abstract.

Abrams, E. ... 574
Aktiebolaget Centrallaboratorium ... P 603
American Asbestos Industries, Inc... P 609
American Can Company ... P 606
American Cyanamid Company ... P 615
American Newspaper Publishers Association ... 576
Amos, G. L. ... 560
Anaconda Wire and Cable Company. P 616
Anderson, H. ... P 609
Anderson, M. ... 589
Anderson, N., Jr. ... 576
Anderson, T. C. ... 570
Angelo, M. ... P 605
Anthony, R. H. ... 595
Arabol Manufacturing Company ... 546
Arneson, L. E. ... 557
Atchison, J. E. ... 577, 594
Banks, W. H. ... 582
Barker, S. A. ... 592
Barron, H. ... 584
Battista, O. A. ... 551
Baxter, T. R. ... P 615
Beachler, E. D. ... P 611
Beckett, W. ... 595
Beech-Nut Packing Company ... P 611
Beloit Iron Works ... P 611, P 613
Belsinger, J. R. ... P 620
Belsinger Inc. ... P 620
Benjamin, F. H. ... P 613
Berch, S. H. ... P 609
Berg, H. E. ... 591
Bernard, J. ... P 609
Bernard, W. ... P 609
Bernhardt, A. A. ... 561
Bernstein, S. ... 583
Besmertnuk, E. ... 554
Binsack, J. W. ... P 611
Bisset, I. J. W ... 560
Blake, Moffitt & Towne ... P 607
Blakemore, F. T. ... 571
Blum, S. ... 593
Bonds, W. M. ... P 616
The Borden Company ... P 604
Bouchard, O. ... P 603
Bourne, E. J. ... 592
Bowen, R. E. ... P 609
Braun, K. ... 553, 602
Breyfogle, R. H. ... P 613
Bridge, F. ... 583
Brown, J. C., Jr. ... 584
Buck, G. S., Jr. ... 595
Buckman Laboratories, Inc. ... 591
Burbidge, H. G. ... 593
Burke, J. P. ... 598
Butterick, J. A. ... 574
Caldwell, J. ... 593
Callahan, T. P. ... 590
Cam, R. H. B. ... 549
Canadian Celanese Limited ... P 621
Canfield, R. E. ... 577
Carter, W. J. ... 561
Cartwright, R. B. ... P 606
Cassaday, J. T. ... P 615
Chamberlain, E. A., Limited ... P 611
Chambers, R. J. ... 568
Champetier, G. ... 551
The Champion Paper & Fibre Company ... P 614
Chemical Developments of Canada Limited ... P 621, P 622
Cheyney, L. E. ... P 620
Christenson, R. M. ... P 621
Christiansen, C. ... P 609
Church, J. M. ... 596, 597
Clapp, C. W. ... 583
Clark, L. E., Jr. ... P 604
Clauson, K. A. ... 577
Clunan, A. B. ... P 621
Cochran, J. W. ... P 620
Cohoes Envelope Company, Inc. ... P 617
Conner, W. S. ... P 610
Conser, H. F. ... P 609
Coppick, S. ... 596, 597
Craig, D. ... 559
Crary, J. D. ... P 615
Dadswell, H. E. ... 560
Dahl, E. ... 552
Day, F. T. ... 581
Day, W. C. ... 567
Deloye, J. J. ... P 611
Dennis, H. ... 600
Denny, J. L. ... 587
Diamond Straw & Machine Corporation ... P 612
Dietz, A. G. H. ... 585
Dobrow, M. C. ... 577
Donaldson, J. ... 578
Dreyfus, H. ... P 621
du Pont de Nemours, E. I., & Company ... P 614

Eastman Kodak Company 582
Electrolux Corporation .....P 618
Elgee, H. 559
Elton, J. A. 578
Enebo, L. 560
Enkvist, T. 566
Erdtman, H. 566, 599, 600
Evans, R. N. .....P 603, P 608
Everest, D. C. 578
Every, D. 565
Fain, J. M. 596
Farber, E. .....P 608, P 619
Farrell, R. A. .....P 607
Fowler, R. M. 578
Fox, F. L. .....P 604
The Fox Paper Company .....P 618
Franco, S. A. .....P 612
Franklin, J. N. 559
Friedberg, A. .....P 612
Friel, H. C. .....P 610
Gahl, E. A. 569
Gain, J. C. C. 588
Gardner Board and Carton Co. .....P 606
Gaylord Container Corporation..589, P 604
Gehm, H. W. 548
General Aniline & Film Corporation..P 617
General Dyestuff Corporation 591
General Electric Company .....P 607
General Mills, Inc. .....P 609
Genung, L. B. 553
George, W. C. .....P 604
Georgia Kaolin Company .....P 605
Gianninoto, F. .....P 604
Gilbert, A. B. 588
Gilbert, J. A. .....P 612
Gilowitz, B. .....P 612
The Glidden Company .....P 615
Goddard, H. O. 559
Goodrich, A. S. 569
Goodwillie, J. E. .....P 611
Gordon, H. A. P. 564
Gordon Cartons, Inc. 562
Gottlieb, S. 567
Grålen, N. 563
Gruntfest, I. J. 599
Gulledge, H. C. 596
Gurr, A. F. 556
Hägglund, E. 566
Halley, C. H. .....P 615
Hamilton, A. D. 601
Hamm, H. A. .....P 616
Hampton, B. L. .....P 615
Hansen, O. .....P 622
Hardwood By-Products, Inc. .....P 619
Harrison, H. A. 583
Harrison, V. G. W. 582
Harvel Research Corporation .....P 605
Harvey, L. M. .....P 613
Harvey, M. T. .....P 605
Haug, A. J. 581
Hauth, W. E., Jr. 587
Head, W. L. 561
Hechler, G. 599
Heckel, H. C. N. .....P 614
Hermans, P. H. 564, 601
Hershman, S. I. 598
Hess, K. 561
Heuser, E. 551
Heyman, A. A. .....P 610
Hickernell, L. F. .....P 616
High, F. R. .....P 622
Hill, A. .....P 616
Hill, A. C. 579
Hills, H. 561
Hinde & Dauch Paper Company .....P 620
Hinton, L. 572
Hoag, R. W. .....P 606
Hoblick, B. M. .....P 607
Hodge, A. J. 561
Holbrook, J. E. 575
Holland, O. C. 585
Holmes, T. J., Co., Inc. .....P 622
Hornbostel, L. .....P 613
Huseby, R. A. 556
Huye Space Saving Box System, Inc. P 620
Infilco Incorporated .....P 607
Ingalls, H. E. 573
Ingrassia, A. P. 608
The Institute of Paper Chemistry ...P 621
International Cellucotton Products Company .....P 611
Irwin, J. M. .....P 608
Jacobs, S. S. .....P 606
Jahn, E. C. 582
James, L. .....P 620
Jebsen, W. 571
Johnson, G. M. .....P 603
Johnstone, E. P. 597
Jones, D. 547
Jones, G. W. 548
Judd, D. B. 555
Kahn, J. M. .....P 607
Kärrholm, M. 563
Kasser, A. 551
Kelland, N. S. 552
Kemline Metal Products Company ...P 620
Kilpper, W. 547
Kraft Foods Company 550
Krause, G. 553
Krebs, C. H. .....P 616
Kress, F. J., Box Company .....P 613
Kuhn, J. 571
Kunz, B. P. .....P 604
Lahey, R. W. 590
Lambrecht, R. C. 589
Langway, M. .....P 616
Larsen, S. A. .....P 608
Launer, H. F. 553
Leask, J. A. T. .....P 610
Leidelmeyer, E. A. .....P 618
Leopold, B. 566
Lewis, H. F. .....P 619
Libby, C. E. .....P 619
Lieb, D. J. .....P 604
Lieser, T. 567
Light, D. W. .....P 615
Lindberg, B. 599, 600
Lindstedt, G. 600
Little, R. W. 596, 597
Logan, K. C. 568
Loth, G. .....P 620
McCarthy, J. H. 574
McClelland, W. B. 573
McCutcheon, R. J. .....P 620
Macdonald, R. G. 547
McKee, W. N. 591
McKenzie, A. R. 601
MacLeod, K. S. 549
McMillan, H. .....P 617
Mair, W. E. 601
Malsberger, H. J. 562
Marathon Corporation .....P 607
Maritime Association of the Port of New York. *Packaging Committee* 590
Marsh, R. 555
Masonite Corporation .....P 604, P 608
Mauthe, G. .....P 621
Meigs, R. J. .....P 617
The Meyercord Company .....P 610
Midouhas, S. P. .....P 620

Miller, E. P. ..... P 611
Mispley, R. G. 554
Modern Packaging 589
Monsanto Chemical Company ..... P 614
Moore, J. D. 575
Morgan, R. L. ..... P 615
Muirson Label Co., Inc. ..... P 605
Müller-Rid, W. 571
Murphy, C. G. ..... P 614
Murphy, E. A. 564
Nace, D. M. 586
National Council for Stream Improvement (of the Pulp, Paper, and Paperboard Industries), Inc. 594
Néel, J. 551
Nicoletti, A. 586
Ningel, M. 552
Noerr, H. ..... P 621
North, F. 557
North Carolina Pulp Company ..... P 609
Oswin, C. R. 583
Othmer, D. F. 550
Owen, R. S. 598
The Pacific Lumber Company ..... P 619
Paper Sales 582
Paper Strap, Inc. ..... P 615
Parker, L. T. 565
Pascoe, T. A. 600
Patch, C. E. 575
Patrick, K. 572
Patte, W. E. 583
Pearl, I. A. 594
Peat, D. W. 549
Peat, S. 592
Peck, S. A. 575
Pelczar, M. J., Jr. 567
Peterson, W. D. ..... P 617
Peterson, W. R. ..... P 612
Picton, N. 552
Pieper, J. 552
Pittsburgh Plate Glass Company .... P 621
Pocta, F. 590
Polleys, R. W. 571
Potter, G. J. C. 594
Prevost, B. E. 570
Pulp & Paper 580
R. L. D. 567
Rae, R. D. ..... P 621
Rambo, F. R. ..... P 605
Ramond, A. 575
Ransburg Electro-Coating Corp. ..... P 611
Rantaniemi, V. V. ..... P 613
Rathke, H. C. ..... P 610
Rattray, J. E. 576
Rayon Or'ganon 587
Rayonier Incorporated ..... P 603
Reed, R. F. 586
Reeves, Z. 546
Reich, I. 595
Reid, G. C. ..... P 606
Rennerfelt, E. 563, 600
Rice Barton Corporation ..... P 613
Richter, A. E. 561
Ringler, W. A. ..... P 606
Ritchie, J. L. 579
Rohrbaugh, N. B. 593
Rose Brothers (Gainsborough) Limited ..... P 612
Ross, S. 562
Ross-Ross, D. 556
Rottman, G. ..... P 606
Ruffin, A. E. ..... P 605
Russell, J. K. 559
Ryan, P. P. ..... P 619
St. Regis Paper Company .... P 612, P 619
Salfisberg, L. L. ..... P 612
Sandwell, P. R. 558
Sandy Hill Iron & Brass Works 548
Scarth, J. C. 561
Schaack, W. 567
Scheil, M. A. 556
Scheuermann, H. ..... P 622
Schilf, J. J. ..... P 607
Schoenborn, E. M. 585
Schubert, E. 558
Schweisheimer, W. 564
Scott, M. J. ..... P 614
Seal-Craft, Incorporated ..... P 612
Sears, G. R. ..... P 621
Seidel, G. R. 596
Sellers, F. G. 572
Sen, M. K. 564
Sermattei, J. P. ..... P 614
Shapiro, J. ..... P 610
Shedd-Bartush Foods, Inc. ..... P 610
Shellmar Products Corporation ..... P 617
Sherwood, A. L. ..... P 612
Shrontz, D. C. ..... P 617
Sieffert, L. E. 585
Silvis, S. J. 550
Sinclair, W. D. 554
Smedslund, T. H. ..... P 603
Smith, J. M. ..... P 606
Smith, L. E. 572
Smullen, G. C. 550
Snell, F. D. 595
Sonley, G. R. 601
Sowa, F. J. ..... P 617
Spahr, R. J. ..... P 604
Speckman, S. S. ..... P 607
Standard Brands Incorporated ..... P 615
Standard Cap and Seal Corporation .. P 616
Stenger, R. C. ..... P 610
Stevenson, L. T. 549, 579
Stone, W. E. ..... P 613
Sutherland Paper Company .. P 610, P 612
Swingle, W. S. 550
Sylvester, L. A. 557
Tait, A. W. ..... P 606
Tammerfors Linne- och Jern-Manufaktur Aktiebolag ..... P 613
Technical Association of the Pulp and Paper Industry 547, 584
Technical Section of the Paper Makers' Association of Great Britain & Ireland. *London Division* 561
Timber Engineering Company ..... P 608
Tock, W. H. 568
Traska, W. ..... P 618
Treiber, E. 602
Turner, M. W. 572
Tweedie, J. 568
Tyrrell, W. B., Jr. ..... P 618
Underwood Corporation ..... P 604
Van den Akker, J. A. ..... P 621
Van Wazer, J. R. 554
Vermaas, D. 601
Vick, E. H. ..... P 611
Vincent, R. 580
Visscher, H. J. ..... P 619
Visscher, J. ..... P 619
Vogel, H. A. ..... P 621
Walker, C. R. ..... P 618
Walker, F. 572
Walsh, J. M. 554
Walters, T. R. ..... P 607
Wardrop, A. B. 561
Warren, S. D., Company ..... P 614
Warwood Tool Company ..... P 620
Weidinger, A. 601

Weir, H. N. 569
Welsh, J. N. 593
The Western Union Telegraph Company ..... P 617
White, D. O. 572
Whittaker, H. ..... P 605
Whyte, M. K. 566
Wilkinson, I. A. 592
Williamson, G. E. 580
Wilson, A. D. ..... P 614
Wilson, W. K. 553
Windeck-Schulze, K. 552
Wingfoot Corporation ..... P 608, P 622
Wintgens, H. G. 580
Worden, R B. ..... P 618
Yoss, M. ..... P 607
Young, E. M., Jr. 599
Young, V. 563
Zettlemoyer, A. C. 586
Zima, J. J. 576
Zinn, J. A., Jr. ..... P 607

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